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### REVIEW OF NEW BOOKS.

*The Life and Times of Sir Thomas Gresham, compiled chiefly from his Correspondence preserved in Her Majesty's State-Paper Office: including Notices of many of his Contemporaries. With Illustrations. By J. W. Burgon. 2 vols. 8vo. London, 1839. Jennings.*

THOUGH prolix and somewhat tedious and minute, there is a good deal of interesting matter in these two volumes, which, had they been one, would have met with our more unqualified approbation. Mere personal details and statements about relations, near and distant, or clerks or servants, could never have been of sufficient consequence to engage public interest; and now, after so long a time has elapsed, it must be confessed that they claim no regard whatever. Had the family of Gresham, like that of the Medici (whom he resembled in many points), descended in papal and princely streams through national annals—even then such microscopic inquiries would have been thrown away. We only want the main features of such a life, accompanied by those particulars which illustrate character or reflect the manners of the age, with such unknown circumstances as may attach to historical affairs hitherto less clearly represented and explained.

Having set out with all the blame we intend to cast upon Mr. Burgon's labours, we can now the better afford to praise his diligence and research, and point attention to some of the many merits of his performance. Of Gresham's birth, and parentage, and education, we shall say no more than that his father, uncles, and cousins, were of Norfolk, and among the most wealthy and eminent London merchants; and that he had the benefit of at least a partial, if not a lengthened, university upbringing at Gonville Hall, Cambridge. He was probably born in London in the year 1519, and saw the crown on the heads of Henry VIII., Edward VI., Mary, and Elizabeth, by the three latter of whom he was much and confidentially employed in commercial, financial, and political business. At the period of his entering upon his active career, Antwerp was the great mercantile mart of Europe, and its rich traders were the bankers and loan-contractors of monarchs. This city was the scene of his most extensive operations, in connexion with the Fuggers and Schetz, the Rothschilds and Barings of the sixteenth century. We copy here a notice of one of their transactions in the year 1552, *temp. Ed. VI.* The letter is addressed by Gresham to the Duke of Northumberland:—

“It maye please your Grace to be advertised, that as the 20th of this present, I came unto this towne of Andwerpe in safetye; whereas I fownd neither Jasper Schetz, nor the Fugger's factor (being at Brussels, and lookyd for to-morrow at the forthest, being the 21st daye). With whome I shall treat according to soche commissiouns as the King's Majesty haythe given me; wishing at this tyme that yt maye please God to send me soche good succes, as that the King's Majesty's honnor and creditt maye be nothinge touched. For that yt shall be no small grief unto me, that in my tyme, being his

Majesty's agent, anny merchant strangers shuld be forssid to forbear their monny agaynst their willes: wyche matter from hensforthe must be otherwyse foreseen, or else in the end the disonnestye of this matter shall hereafter be wholly layde upon my necke, yff anny thinge shuld chance of your Grace, or my Lord of Pendbrocke, otherwise than well; for that we be all mortall. Wyche matter I doo not dowght, yf God send you life, you will foresee in tyme: wherein I will advertise you my poor and sympell advyce at large. But ere that I doo proceed anny further in this matter, I shall most humbly requyre your Grace to pardone me of this my writing; for that this matter touchyth the King's Majesties honnor and credit, wyche I am bownd by my othe to maynteyne and keep: as also the very love and obedience I doo owe unto you, puttethe me cleane out of feare to wryte unto you this my full mynd at large. What follows, explains the difficulty Gresham had experienced:—‘Fyrst, it maye please your Grace to understand that at my comyng home, I brougth with me two bargaynes for to discharge the King's Majesty's dett, due the 20th of August, amounting to the sum of lvi m li. [56,000l.], as also an overplus to remayne in the King's hands for the space of a yere: and that was, I offered lii m [52,000l.] in redde monny, after the rate of xii li. upon the hundred for a whole yere. And therewith, the King's Majesty shuld have takynne Manuel Ryssis jewel, wyche I offered once to you for viii m li. [8000l.]; with another dyamownd of the vallow of one thousand poundes. Wyche jewel I showed to the counsell at Alltham,\* being there my Lorde of Wiltshire, my Lorde Darasay, my Lorde Warden, Sir John Gates, and Mr. Secretary Syssell; and they made their reckonyng the jewels to be worthe nothinge, were they never so perfette or orient. Secondly, I offeryd them a bargayne from the Fugger for the prolongacion of xxv m li. [25,000l.] and to have taken v m li. [5000l.] in fustians: wyche also dyd not lyke them; saying that there was no other remedy, but that the Fugger and the Schetz must forbear with the King's Majesty at this tyme; and that they would have them prolongyd for another yere, withowght takyng of anny merchandize or jewels. Wyche matter dyd not a littil abash me, considering how things heretofore hath been usyd. For, as your Grace dowth right well knowe, when the King's Majesty's Father dyd fyrst begynne here to take up monny upon interest, Mr. Stephen Vaghan being his agent, a took the fee-penny in merchandize—eyther in jewels, copper, gundepowder, or fustians. And soe the matter hayth passid ever since in taking of wares, when the King's Majesty made anny prolougacyone, until the charge thereof was commytted unto me. Wherein I travelyd to the uttermost of my power, and by the means of my friends I fownd the means to serve the King with xx m li. [20,000l.] withowght takyng of anny jewels or merchandize, as your Grace best knoweth. And to be playne with your Grace in this matter, I was fayne to

give forth my owne [word] that this monny shuld be paid at the just daye, or else the King's Majesty could never have hadd yt. The writer proceeds to expose the great disadvantages likely to ensue from the course he had been ordered to adopt with the king's creditors; adding, ‘To be playne with your Grace in this matter according to my bowndyd dewtye, verily if there be not some other ways takynne for the payment of his Majesty's detts, but to force men from tyme to tyme to prolong yt, I say to you, the end thereof shall neyther be honorabill nor profitable to his Highness.’”

This is extremely illustrative of these royal and national affairs; but we pass on to quote a passage of a later date, and relating to Queen Mary:—

“The extraordinary supposition that the queen was about to become a mother, when she was in truth afflicted with dropsy, did not fail, before it reached Antwerp, to assume the serious form of an actual occurrence: nor could less have been expected, after the great pains which had been taken at home to fill the public mind with expectations of an heir to the crown. Gresham writes thus to the lords of the council on the 4th of May, 1555:—‘It maye please your most honorabill Lordships to be advertised that as the iiii<sup>th</sup> of this present, here came newes along the seas by men of this country, that the Quene's Majesty was brought a-bed of a yonge Prynce, the last of April; whiche newes contynued here till the iiiii<sup>th</sup> day. And as the thyrde day, the Regent, being in this town of Andwerpe, about 7 of the clocke at night, dyd cause the great bell to ringe, to give all men to understand that the news was trewe. Signifying unto your honors, that as the iiii<sup>th</sup> day, upon the aryvall of the fyrst newes, the Quene's highness' mere merchants, according to their most boundyd dewtye, causyd all our Englishe ships to shoote off with such joy and triumph as by man's art and pollicsey could be devysed, in the presence of the Regent, with all her nobills and gentillwomen. Whereupon the Regent presently sent our Englishe maroners one hundred crowns to dryncke. Trusting\* in God the news to be trewe; for as yet, I, nor none of our nacion hath no certayne wryting thereof.’ Notwithstanding a certain degree of concern which this passage in Queen Mary's history excites, there is something irresistibly ludicrous in the accounts transmitted to us of the extent to which the delusion alluded to was indulged. ‘All the court,’ says Grafton, ‘was full of midwives, nurses, and rockers; and this talk continued almost half a year, and was affirmed true by some of her physicians, and other persons about her; which seemed both grave and credible. Inasmuch that divers were punished for saying the contrary.’ On the 3d of May, the Bishop of Norwich received ‘the sodeine good newes of the Quene's Highnes moost joyfull deliverance of a nooble Prince: whereupon, to laude God, *Te Deum* was solemnly sung in the Cathedral Church, and other places of the cytte [of Norwich], with wonderfull joye and muche gladness of all people theroaboutes all the whole cytte and the countrey thereaboutes.’ \* The parson of Saint Anne within Aldersgate,

\* Waltham, where the council had sat on the 7th, 8th, and 10th of August, 1552.—Council-book of Edward VI. MS.

says Foxe, 'after procession, and *Te Deum* sung, took upon him to describe the proportion of the child; how faire, how beautiful, and how great a prince it was, as the like had not been seen.' But by far the most extraordinary circumstance connected with this delusion has never yet been noticed in print. There is in the State-Paper Office an original letter to Cardinal Pole, signed by Philip and Mary, announcing the birth of a prince as an event which had already occurred. 'Whereas it hath pleased Almighty God of his infinite goodness to adde vnto the great number of other his benefites bestowed vpon vs, the gladding of vs with the happy deliuerie of a prince.' The date is left blank, but the letter is endorsed '29th May, 1555.' Passages such as the foregoing, however, are comparatively of rare occurrence in Gresham's correspondence at this period. Whatever favourable disposition towards him Secretary Boxoll may have entertained, there seems to have been wanting that cordiality between them,—the fruit of intimacy and similarity of sentiment,—which alone can impart interest to a correspondence; and however honourably treated by the council, and favourably noticed by the queen, Gresham generally confined himself in addressing both, to the strictest details of business."

Of this Boxoll, by the by, we are told:—

"So little is known concerning the history of Secretary Boxoll, that the two following extracts from Queen Mary's Council-book will not be unacceptable. Under the 23d of September, 1556, we find, 'This daye was Mr. Boxoll, warder of Winchester College, sworne and admitted one of the King and Queene's Majesties' Counsell at large; and as one of the Maisters of Requests, and a counsaillor of that corte.' On the 21st of December, the following entry was made:—"This daye, Mr. Doctor Boxoll, Archidiacon of Ely, was sworne and admytted one of the Kinge and Queene's Majesties' privie Counsell.' (MS. in the Council-Office, f. 418, and f. 478.) These minutes, besides their biographical value, lead to the important inference, that to be of the 'council at large,' and to be of the 'privy-council,' were different things; and, consequently, that a man might be Queen Mary's counsellor without belonging to the privy-council. The former phrase seems equivalent in its signification to the term 'privy-council' at present; and 'the privy-council,' as used formerly, was what we now call 'the cabinet.'"

At the death of Mary, "the removal from office of Bourne and Boxoll,—Queen Mary's two secretaries, who were also strong papists,—and the immediate promotion of Sir William Cecil, were indispensable acts; and, among the few exceptions to the practice wisely observed by Elizabeth, of displacing as few of the ministers of the late queen as possible. Boxoll's behaviour on this occasion sets his character in a favourable light, and commands our applause; for, instead of interposing obstacles to his successor in office, it is clear, from a few of his letters to Cecil, dated about this period, that he cherished no sentiment but that of anxiety to afford him all the assistance in his power. He subscribes them in the language of affection—"Your lovinge friend, Jo. Boxoll." One, in particular, dated only two days after Queen Mary's death, calls for notice, from the interesting circumstances it reveals. It seems probable, from its contents, that Thomas Gresham, when that event occurred, was out of England; and we learn from the same letter the melancholy and remarkable use to which the great seals, attached to the bonds which he must

have been expecting at Antwerp, were applied. His financial occupations in Flanders were of the highest importance, or they would not form the main subject of the very first communication which the late secretary addressed to his successor in office. Boxoll's letter accompanied a number of documents essential to the conduct of public affairs:—"The commission made to my lords now beyond the sea, with their instructions, and all such letters as have been whrytten by the late Queen,' &c., 'which,' he says, 'I have put in order, in such sorte as a man coming home in a sharpe fyfte of a quarten might do. You shall receyve also herewith, Greshames doings towching borrowing of money to the use of this Realme, and the said Queene's highnes late deceased. The letters are in ii packets;—th' one of the last yere,—th' other of this presente. The two Bandes whereof I spake vnto you, cannot be founde: they were left in the bedde-chambre of the late Queene's highnes, to be signed with her hande; and at the ceringe of the corse (as Clarenceiux saith) converted to that use. They import nothing. . . . . You shall fynde,' he adds, 'in Greshames lettres whrytten this last October to the Queene's highnes, my Lords of the Counsell, and me, the Marchants names, and the somes of money that are to be conteyned in theis bandes nowe to be maid presently.' This letter was written from St. James's, on the 19th of November, 1558, and was delivered to Cecil the same night.\* Gresham may have been out of England on the day Queen Mary died; but he cannot have been far off, and certainly lost no time in repairing to Hatfield after that event. As already stated, Cecil was with the new queen on Friday the 18th, which was the day after her predecessor's decease: a single day elapses, and we learn, on the best possible authority, that on Sunday, when the first council was held, Gresham presented himself before Queen Elizabeth, and formed one of the group of statesmen who might be seen assembled at Hatfield on that interesting and memorable occasion. Some years afterwards, in a retrospective mood, he fortunately relates this portion of his history; and supplies us with a characteristic saying of Queen Elizabeth at their interview, which is worth preserving. These recollections were suggested, in 1560, by an attempt which the Marquess of Winchester made to injure him with Queen Elizabeth during his absence; and again, in 1563, by a threatened reduction of his stipend: of both which acts of injustice he complained most bitterly to his friend Cecil. 'It maye please you,' he says, 'to be a meane unto the Queene's Majestie for me; and to put her in remembrance of my servise done this fyve yeres, that she maie have some remorsse upon me,—according to her Majestie's promise that she maid me, before you, at her highness' house at Hatefylde, the xx<sup>th</sup> of November, a<sup>no</sup> 1558, when her highness came to the crowne: and that was (upon the dyscoursing how I was handelyd in Quene Maryes tyme for my good servise), her highness promised me, by the fayth of a Quene, that 'she wold not onely kepe one ear shut to hear me; but also, yf I dyd her none other servise than I hadd done to King Edward, her latte brother, and Quene Marye, her latte syster, she wold geve me as much land as ever both they did: wyche two promyses, I will insewre your honour, maid me

a young man agayen, and caussyd me to enter upon this great charge agayen with hart and courage. And thereupon, her Majestie gave me her hand to kyss; it; and I exseptith this great charge.' When Queen Elizabeth promised Gresham that whatever evil reports might at any time reach her concerning him in his absence, she would always keep one ear shut to hear him on his return, she was no doubt thinking of a passage in her own early life; when, under sentence of imprisonment, she had 'knelt with humbleness of hart, because not suffered to bow the knees of her body,' to her sister Mary; imploring her to remember her last promise, that she should never 'be condemned without answer and due profe;' adding, 'I have harde in my tyme of many cast away for want of comminge to the presence of her prince.'"

When we said we had confined our objections to the few points mentioned at starting, we had forgotten that of which we were not reminded till we proceeded with our extracts, viz. the waste of labour upon conjectural statements and arguments founded upon them (see p. 126, vol. i., for a curious example of this); and though the *cui bono* of many of the details might be answered with some show of reasoning, we are sure that the notions of "what might have been the case," and the conclusions drawn from such suppositions, had much better have been omitted. We will copy a short instance:—

"On the 23d of August he (Gresham) started on his journey, and met on the road the post which was the bearer of Clough's long despatch, dated the 21st, given in a preceding page. This he forwarded immediately to the secretary, with a short letter of his own, from which the following is an extract, dated 'from Halling Plasyse, besydes Rochester, the xxiiij<sup>th</sup> daye [of August], at one of the clocke after mydnyght.' It seems reasonable to infer from the context, that he was writing in the house of his cousin, Thomas Leveson, or Lewson, Esq., who had married Ursula, a daughter of Sir John Gresham: but neither Hasted nor any older authority notices Halling Place as a residence of the Levesons; and what is stranger, instead of one mile, that mansion is nearly five miles distant from Rochester."

Now, what does it signify from what particular house a note or letter happened to be written? But we return to August 1563, for an extract in which the great plague is alluded to:—

"Good Sir, the more haste there is made in the writing of the bands, the sooner they will be there; by the reason the payments be at hand, and there is no reameyde but some satisfaction must be presentid in tyme, for the preserving of the Queene's honor and credit: whiche hath bin, and is, all my care,—considering to what good pourpose It hath bin brought, and how moche credit hath stood her in stead; as your honour dothe right well knowe.—Likewise, I shall most humble desier you as they may be such order takin, that my billes of exchange for the ij *xxv c li* may be paid (which will falle out the last of this month); by the reason, this plague tyme,

\* Domestic Correspondence, St. P. Off. Another of Boxoll's letters, in the same glorious repository, is dated 'from my howse in Canon Row.' Cecil also lived in Canon Row, Westminster, though he was now at Hatfield. How interesting does that narrow little street become in consequence!

\* "The original of this extraordinary letter (which has been often reprinted) is preserved among the State Papers. It is entirely in the hand-writing of the Princess Elizabeth, and must have been written on Saturday, March 14th, 1553-4, the day before she was committed to the Tower. Lord Coke has endorsed it, 'Queen Elizabeth, my dear sovereign's letter to Queen Mary, in *vol. c. lvi.*' (Dom. Corr.) See Ellis's Letters, 2d Ser. vol. ii. p. 253."

there is noe money nor creadit to be had in the street of London [Lombard Street]: for I understand by my servant Candeller, that everie man is afraide to speke one with another. Therefore, it maye please you to move the Queene's Majestic to see it presentlie paide; and hereafter, when the plague is passid, and everie man falls to his trade agayne, monny will be better to be had. Therefore I praye you, Sir, for this tyme, to consider what great moment it is unto me to run upon the Exchange, for the preserving of my poore name and creadit; which is the cheifest substance that God hath sent me, as you doe right well knowe."

The state of a royal agent in those days is strangely exemplified in the following:—

"Gresham's next letter is dated the 3d of October; wherein he says that, since he wrote last, 'It had pleased the Lords of the towne to licence him to come into the towne to his house, with all his servants;' and that he had succeeded in contenting all the queen's creditors except Rantzowe and Brocketrope. 'I colde bye no meanes bringe the factor of the sayd men to conclude with me; by the reason his comission extendyd only to be paid, or elles to arrest me; and to proceed in justice.' He relates how he had persuaded this agent to repair to his masters, and see if he could not persuade them to agree to the prolongation of the debt, by promising to defray the expenses of his journey, and to give him on his return a chain of gold; and he insists on the Indispensable necessity of the queen's getting ready by the 20th of November, 20,000*l.* in gold, to be sent over to Antwerp for the purpose of being coined there, which would be more advantageous to the queen, he said, than paying by exchange."

The erection of the Royal Exchange, however, may be looked upon as the grand event of Gresham's life, it having been suggested by his father, Sir Richard, and undertaken by him after he had the calamity to lose his only son and heir. The details are interesting, though Stowe's account is ample enough for general information. That Henryke, of Antwerp, was not only the architect, but that, except the wood, almost every article of the material was imported from the Low Countries, are strong evidence of the destitution of England, in these respects, and of her dependence upon foreigners:—

"It is (says Mr. Burgon) quite surprising to perceive, from the incidental notices contained in his correspondence, to what an extent, at this period, an English edifice was indebted to continental artificers, not merely for its decorations, but for its most material features. One cannot help regretting that one of the numerous letters which it is certain that Gresham wrote to Clough about this period, enumerating the objects of which he stood in need, and describing the progress he was making, has not been preserved to us. This, however, was not to be expected; and Clough, very naturally, confines his replies to a general expression of pleasure at the satisfactory accounts his master continued to send him, and a promise that 'the provision' ordered,—that is to say, the architectural and other materials,—should be forwarded with the least possible delay. 'And as touching your things belonging to the Bourse, according to your last, they shall be provided here, and sent away as soon as they shall be ready.' In the beginning of December we meet with the following passages. 'I have also received within that your letter, a letter that the Erie

of Wormonde [Ormond] sent you; the order whereof I wyll follow, and wyll not fayle but to sende both the wainscot and the glass by the first ship that shall depart for those parts. And for that he shall be well servyd of his wainscot, I do now send one to Amsterdam to provide wainscot for the Bourse; who shall buy so much more: and that beyng done, I wyll choose out his 200 out of 1200, whereof he shall have the best. And for the glass, it shall be bought out of hande. Notwithstanding, I doubt there wyll no ship depart for those parts before March; but and if there do, and that I can by any meanes gett so much freight in them, they shall be sent with the first: whereof have you no doubt. . . . And whereas you write me, so well as towching certain provisions of howsholde, as also as towching the Bourse, you shall understande that I have shipped in Cornelys Jansone's sprette all such things as you wrote for; whereof I have wrytten my fellow Candelor at large. And as touching the Bourse, we do now begyn to shippe some part thereof; and before Easter, we trust all shall be shipped from hence.' Accordingly, about the following Easter, that is to say, sometime in April 1567, John Worrall, one of Gresham's apprentices, wrote as follows to his master: 'Richard Backer, your worship's man and his fellowe . . . be here, ready to pass [in] these next ships for London; wherefore, I mean to send them in one of the shippes layden with stone for the Bourse, for the which there ys three ships readie to departe from hence, as tomorrow, yf that the wynde serve them.' Worrall appears as Gresham's correspondent, in consequence of Clough's absence from Antwerp; the latter having left that city on a matrimonial excursion, of which it will be more proper to speak hereafter: suffice it for the present to state, that although requested by Gresham to remain in Flanders, until 'he had despatched all the provision of stone for the Bourse, and hym that had tacken it in hand.' Clough hastened into Wales on a more interesting errand. He returned to Antwerp, however, a married man, by the middle of May 1567. Meantime, the erection of the Bourse went forward; and in the course of a few months, sufficient progress had been made with the edifice to render it desirable to introduce the statues, which, up to the period of its destruction, formed a conspicuous part of its interior decoration. They seem, from the following passage in one of Clough's letters, to have been all made in England, with the exception of Queen Elizabeth's: some of the other statues having been sent to Antwerp, apparently for the purpose of shewing the artist in what style and of what size he was to produce the figure of her Majesty; which, by a natural act of courtiership, it was intended to make the principal object. 'I have received the pictures you wryte of,' says Clough, 'whereof I wyll cause the Queene's Majestie to be made, and wyll sende you the rest back agayne with that, so soone as yt ys done.' About a month later, the edifice began to be slated. Clough writes: 'And as touching that you wolde have sayd to Henryke, I have so done; and he wyll make his provysion thereafter, and wyll come withall along seas: for he sayeth he wyll nott go over and leve the stones beynd him. And for the slates they shall be bought and sent you with the rest of the stuff.' After a fortnight had elapsed, we read, 'I do perceive by your letters, that the slates were not come from Dort, whereof I have marvel: so that I wyll send awaye the other that you wrote for, hoping that Henryke

ys arrived with you long past, and all such stones as was lacking for the Bourse; and I do look daily for Mr. Secretary's porte; which is promised to be here by Michaelmas day.' Elsewhere we find mention of iron bought for the Bourse. In short, it is evident that nearly all the materials of which that edifice was composed were brought from Flanders; and it is worth observing, that the date of the last passage in Clough's letters, where the slates for the Bourse are mentioned, is October 1567, which corresponds very well with Stowe's narrative,—'by the month of November, in the year 1567, the same was covered with slate, and shortly after fully finished.'"

And now began the troubles in the Low Countries; which, from being the wealthiest and most prosperous land in Europe, soon sunk with its people into the lowest condition of bloodshed and misery, with its *Placcarts* for laws, and *Gueus* for Chartistes—a pregnant lesson to every commercial community on the face of the earth. The settlement of many of its most industrious citizens in England, the dispersion of others over the Continent, and, above all, the transfer of the British trade to Hamburg, the account of which is very curious and interesting, are all circumstances well worthy of careful perusal and consideration. The tragedies of Alva, and the destruction of property and security by civil war, are instructive; and Gresham's finance finale almost like the *dénouement* of a drama:—

"I have spoken (he writes) with the Queen's Majestie's creditors for the prolonging of the rest of the xxxij *xi* *li.*, with whom I have had much ado; but (thanks be to God!) now I am at a point with them. So that I have delivered them the new bonds to consider; and upon the receipt of the old, I doo intend (with the leave of God and the Queene's Majestie) to make my repaire homewards with the olde bonds; and so to departe this town with as much honnor and credit to my sovereign as ever I did in all my life. For, withie my sudden departure, I shall give the bourse and all other marchaunts to understand that I have no more neede of monie, and that I have contented all the creditors; which is most convenient for me so to do as the time now requirish. For that I do see and feele already that here is no more monny to be had at no price; by reason I have gone through all the monnie-men by one practise or other, and specially with all them which I was wonte to deale withal,—as the Fucker, Schetz, Paulus Van Dall, Rellinger, Lixall, the heires of Lazarus Tucker, and divers other; of whom there was not a peny to be had, by the reason they be so farre ought with their Prince, and verie sore indebted in this place, and take up all they can get, themselves, to preserve their credit. So, Sir, I will no further molest your honor of the great scarcity of monnie that is here; nor also what ado I have had to come by this monnie; but therein refer me to the report of others. Being right glad, in this miserable time, that I have accomplished the things that her highness sent me over for."

So he gave the Queen's creditors, as was customary, a splendid banquet, and bade them—alas, how ineffectually!—farewell.

In 1574 or 5, after his more active career had closed, and the Bourse been built ten years, Sir Thomas founded his college in London for the gratuitous instruction of all who chose to attend, and Gresham House in Bishopsgate Street (pulled down in 1768) was the result. The seven sciences to be taught were divinity, astronomy, music, geometry, law, medicine, and



rhetoric. Gresham died of apoplexy at the age of sixty years.

*Little Peddington and the Peddingtonians.* By John Poole, Esq., author of "Paul Pry," &c. 2 vols. post 8vo. London, 1839. Colburn.

MR. POOLE introduces this amusing production to us by a preface, which denounces humbug, and does not a little indulge in that quality. It declares that all the characters in *Little Peddington* are nominally and truly what they are represented to be, or have been; and that they bear reference to no other parties whosoever or wheresoever. Persons who have fancied that he drew from other sources and individuals, must therefore be mistaken; i. e. if they believe this assertion, which we confess we do not. But never mind whence the writer has taken his materials. As his sketches appeared in the "New Monthly Magazine," every body acknowledged their humour, and laughed at their clever and never ill-natured satire. His theatrical squabbles, his publisher-disputes, his critical expositions—in short, all his pictures of many-coloured life, were so absurdly applicable, that whilst we were diverted by the fun, we might learn lessons of wisdom and conduct from the examples set before us. We are not aware that any personal offence has been taken at the portraiture; but we can safely aver, that if we had figured in the same manner that others appear to have done, we should have enjoyed the joke and pardoned the freedom.

Mr. Poole's style is peculiarly his own. Under the semblance of playfulness there is always an under-current of very acute observation, and application to the world around, its actors and doings. Sometimes this is caustic enough, and sometimes caricature may be called in to give point and piquancy, but it is seldom altogether unfounded or harshly unjust. There is a drollery about it which would convert a stinging into a tickling; and even if annoyed by it, we could not abstain from laughter.

At all events, we are glad to see *Little Peddington*, and its microcosm, in a separate form. It must entertain the reader; and, if judiciously taken, it may contribute a good deal to the benefit of the drama, criticism, competition, and other pursuits in which all mankind are more or less interested and engaged.

#### MISCELLANEOUS.

*The Modern Literature of France.* By G. W. M. Reynolds, author of "Pickwick Abroad," &c. 2 vols. London, 1839. Henderson.

THE author's view of modern French literature is so essentially opposed to ours in almost all that concerns good taste, morality, and religion, that we cannot enter upon a detailed notice of his publication. It would lead us into a long argument, for which we have neither inclination nor space. All we shall say, therefore, is, that his work contains a good deal of information on the subject, and tells the reader much about recent French works and authors.

*Narrative of a Visit to the Court of Sind, at Hyderabad, on the Indus.* Illustrated with Plates and a Map; with a Sketch of the History of Cutch, and an Appendix. By James Burnes, K.E., LL.D., F.R.S., &c., Bombay Army. 12mo. London, 1839. Most of this little volume has appeared before in various publications, but being collected together and well arranged, we beg to notice it

as one of the most useful and appropriate works of the day, fully explaining the past and present condition of Cutch and Sind; and the best geographical and commercial information that can be obtained respecting the opening of the navigation of the Indus, and the wants, trade, resources, &c. of the inhabitants who live on the banks of that noble river.

*A Series of Letters, Addressed to H. R. H. The Duke of Sussex, as President of the Royal Society, Remonstrating against the Conduct of that Learned Body.* By Lieut.-Colonel Everest. 8vo. pp. 147. London, 1839. Pickering.

THIS biting and satirical pamphlet is an answer to a preceding brochure by Major Jervis, of the Bombay Engineers, with remarks, not of the most placid or complimentary kind, upon an address to the East Indian Directory, signed by thirty-eight members of the Royal Society, recommending certain scientific proceedings in regard to India, and involving the personal employment of the authors of these publications. The principal subject in dispute is the continuation of the Grand Trigonometrical Survey of India, of which geodetical operations Lieut.-Colonel Everest has been the principal superintendent since the death of his predecessor, Lieut.-Colonel Lambton, in 1827 (to whom he was chief assistant, for five years from 1818); and with which he thinks Major Jervis and his friends, in this Royal Society, have improperly interfered. For this offence he belabours them with all his might, and cuts right and left, not only upon the surveying question, but upon other suggestions, touching the languages, the religions, the geography, &c. &c., of the country, about which the advisers were wonderfully ignorant. Such is the character of these letters, and without taking any part in their *pros* and *cons*, we are bound to say that they are sufficiently seasoned to be more piquant and amusing than such matters usually are.

*Smith's Standard Library.* (London, Smith.)—We feel great pleasure in paying a justly deserved compliment to this series of works in a cheap form. They are printed in excellent style in large octavo form, and vary in price from sixpence to four or five shillings. The last issued are "Hume," by Miss Sedgwick, Mr. Stephens's "Incidents of Travel," "The Vision of Don Roderick," and "The Life of Buonveto Cellini."

#### ARTS AND SCIENCES. THE ANTARCTIC EXPEDITION

PROCEEDS, we believe, on its voyage this day, and we take leave to add a few further particulars to the account given of it in our last *Literary Gazette*. At the Cape of Good Hope the vessels will probably not remain more than three or four days, merely to land the observatory and instruments. They will then trace their course by Marron and Prince Edward's Island, Crozet Isles, and so on to Kerguelen Land (S. lat. 49° 50', and E. long. 70°) which being in a vast expanse of ocean, and equidistant from the two great continents of Africa and Australia, is considered a most eligible site for taking observations. Had the expedition been able to sail at an earlier period, it would probably, from hence, have explored the regions ten or fifteen degrees to the south, where are laid down Bellinghausen's course and views of land in February 1820; Briscoe's course, in February and March 1831; Kemp's track and land, seen in December 1833; Enderby's Land, and other interesting points in that direction, of which we have as yet only geographical glimmerings. But as the time will not now admit of this, the voyage will be continued in lower latitudes to Van

Diemen's Land, taking the opportunity, in crossing them, to ascertain the lines of magnetism converging towards the polar circle.

At Van Diemen's Land, the observatory, &c., will be landed, and our navigators meet their old friend and associate in northern enterprise, Sir John Franklin, who, we dare to say, would rather be their companion again than governor of the colony—such is the hold which such exploits and services take upon the minds of men. Whilst the observatory is erecting, the Erebus and Terror will take a cruise along the Australian coast, Port Jackson, &c., look after Howe Island, Admiralty Rocks, Curtis Island, L'Espérance Rocks, Chatham Island, Cornwallis Isles, Antipodes' Island, Campbell Island, Emerald Island, and other very imperfectly known lands, all scattered round New Zealand. On this route they will have opportunities to ascertain the lines of magnetism converging in an opposite direction to those obtained before, and pointing from the westward as the former from the eastward to the magnetic pole.

About November 1840, it may be expected, that having revisited Van Diemen's Land, and completed their observations in the new observatory, our gallant countrymen will sail to fix the precise spot where that pole exists. In our last, we expressed an opinion that it would be found situated rather lower, to the north, than either Capt. Ross or Professor Strauss (as we are taught by more careful examination of their statements) look for it; and it is worthy of remark, that their calculations coincide most curiously on this important question. We would say, then, that the antarctic pole will be discovered somewhere between E. long. 140° and 160°, and lat. 62° and 70°—a small compass when we consider the short measure of the longitudinal degrees in that quarter of the globe.\*

The summer months of December, January, February, March, and April, will be spent in this investigation; and searching for the lands mentioned in our last under the names of *Sabrina* and *Bulleny*. Of the latter, we are informed that the mate of Mr. Enderby's ship landed upon it with a boat, if landing it can be called, when he shoved in amongst the ice, leaped into the water up to his middle, and shovelled up some handfuls of stones and gravel, or sand, from the beach below.

If they can penetrate to the south, perhaps the expedition will winter here among the ices of the South Pole. All beyond is as yet utterly unknown to man.

It would be superfluous for us at this period to endeavour to trace the future operations of the expedition. The pole of intensity will probably be found between the magnetic pole and Van Diemen's Land; and the vessels, it is to be hoped, will return in safety, with all their acquired information, to the latter, in 1841. They will then circumnavigate the great polar basin, and, wherever the attempts can be made, reach the highest possible latitudes. The secondary pole should be near Weddell's furthest point. Circumstances must therefore determine the extent of their exertions, and the time they will employ. But we trust to witness their happy arrival on the English shores, after an absence of three years.

Among the excellent arrangements of the ships, we ought to have noticed the bulls' eyes,

\* *Impromptu.*—The following impromptu was written at Hull, by a friend who, calling on its subject after his landing from a former voyage overcome with fatigue, found him fast asleep: it was struck over his pillow.

"Here lies one, the first whose sole  
Stood on the north Magnetic Pole;  
Doomed upon frozen seas to toss,  
At birth they named him—J. C. Ross."

which, instead of being fixtures, are formed to unscrew; and thus, in connexion with the warm air between decks, may, at all times, be turned to the most perfect system of ventilation. We cannot imagine any expedient so well calculated to conduce to the health of the crew. A gong has also been placed in each vessel, for signals in foggy weather, and in darkness; but, indeed, in every respect, the utmost precautions have been adopted to insure a comfortable progress and a prosperous issue. When we mentioned the engraving in Captain Ross's cabin, we overlooked its appropriate companion, *Christ Still in the Troubled Waves*;—an omission which, as faithful chroniclers, we are bound to repair.

Once more, and again, we have only to repeat our own and the general prayer—“Farewell! Farewell!”

### THE BRITISH ASSOCIATION.

NINTH MEETING: BIRMINGHAM.

[Fourth Notice.]

We have to commence our Report this week with two papers (read on Thursday and Saturday) on a subject of universal interest, which were prepared for our last Number, but deferred, in spite of our teeth, for want of room.

#### SECTION E.—Medical Science.

Mr. Nasmuth, ‘On the Structure of the Teeth.’ Feeling dissatisfied with some of the results of the investigations of late years contained in the writings of Retzius, Purkinje, and Müller, on the subject of the structure of the teeth; and having completed a series of researches, which he had commenced several years ago, and which he had pursued uninterruptedly to the present time, Mr. Nasmuth briefly placed before the Section the conclusions to which he had arrived on the following subjects: 1. On the covering of the enamel; 2. On the structure of the teeth; and 3. On the structure of the pulp, and its relation to the development of the ivory. He observed that the researches of Retzius and Purkinje, so faithfully detailed to the Section last year by Professor Owen, have established, that there enters into the composition of the simple and compound teeth of man and mammalia generally, not only ivory and enamel, but a third substance, the *crusta petrosa*, which had been noticed previously on the free surface of the compound teeth of graminivorous animals. The *crusta petrosa*, as existing on simple teeth, was described after Retzius, Purkinje, and Fränkel, as a layer external to the ivory of the fang, but as not present on these simple teeth as a covering to the enamel. Purkinje and Fränkel, however, state that they had once noticed it coating partially the enamel on the tooth of an old man. Mr. Nasmuth's researches have led him to the conviction that the enamel itself possesses, in all instances, a distinct envelope or coating. On the incisor of the calf, and several other simple teeth, he had also distinctly traced in this layer of *crusta petrosa*, superimposed on the enamel, the corpuscles of Purkinje, analogous to those found in bone. Mr. Nasmuth possesses preparations of teeth of the human subject, and simple teeth of the herbivora and carnivora, shewing this structure in a clear and unequivocal form. The details of its discovery and of its anatomical description, may be found by those who feel anxious to inquire further into the subject, in his paper in the forthcoming volume of the “Transactions of the Medical and Chirurgical Society,” accompanied by drawings. In a paper submitted (see p. 600) to the Geological Section of the Association, on the struc-

ture of the substance, which, in the dental ivory, occupies the space between the fibres, Mr. Nasmuth proved, by a careful examination both of fossil and recent teeth, that the inter-fibrous substance is not structureless, but that it presents a character so remarkably well defined as to furnish a most important and interesting accession to the odontographic basis for a classification of the animal kingdom. [Drawings were exhibited.] He had also made researches into the structure and composition of the fibres of different teeth, and had generally found that these present an interrupted or baccated appearance, as if they were made up of different compartments. The size and relative positions of these portions or divisions of a fibre differ in various series of animals. In the human subject, for instance, each compartment of the fibre is of an oval shape, and its long small extremity is in opposition to the one next adjoining. The long axis of the oval corresponds with the course of the fibre. In some species of the monkey tribe, the fibre appears to be composed of two rows of compartments, parallel to each other, and a trace of the same appearance is evident even in some of the principal ramifications of the fibres. In the orangutan, the fibre is composed of rhomboidal divisions; and in the baboon, they are oval, like those of the human subject, and the surfaces of the long axis are in opposition. When teeth are submitted to the action of acid for a period sufficiently long to allow the earthy matter to be all taken up, the animal residue consists of solid fibres; and if the decomposition be allowed to continue, these fibres present a peculiar baccated appearance. Diagrams exhibited the appearance of the ivory, when the earthy matter has been almost entirely removed by acid, but when the cells still retain their position;—a more advanced stage of decomposition, where there seem to be attached to each fibre minute lateral filaments, which Mr. N. presumed to be the remaining portions of the emptied cells;—and the appearances presented when decomposition has so far advanced as to have rendered the fibre interrupted or baccated. The general appearance of the fibres thus treated is exactly similar to that of the fibres of cellular tissue generally; and the diameter of each fibre corresponds exactly to the diameter of the calibre of the tube, which, according to Retzius, is pervious, although, at the same time, he says that it is always more or less filled with contents of an earthy nature. In fact, the tubes have been said to be principally visible by means of their contents; the reason of which appears obviously to be, that these contents are the only part of them which actually exist. In order to separate the animal matter from the osseous substance of the tooth, Mr. N. submitted thin slices of many different kinds of dental bone to the action of a solution of caustic potash, for a period sufficient to dissolve and remove the organic tissue; but the brittle nature of the residue, the difficulty of washing it without breaking down its structure, and the great opacity of the sections which had been thus treated, deprived this experiment of any striking results, illustrative of the internal organisation of teeth; but the appearances presented in its progress were all such as to favour the conclusion, that the structure of the ivory is essentially cellular. Having convinced himself of the existence of the peculiar cellular structure of the tooth, he entered with great interest on an examination of the organ by which it is produced, viz. the pulp. On examining the internal structure of the pulp generally, the number of minute cells present-

ing themselves in a vesicular form is very remarkable: they constitute, indeed, the principal portion of its bulk. These vesicles vary in size from the smallest perceptible microscopic appearance, probably the ten-thousandth part of an inch in diameter, to one-eighth of an inch, and are evidently disposed in different layers throughout the body of the pulp. They are of various shapes, as shewn in diagrams. When thin layers of macerated pulp are examined, they present an irregular reticular appearance, and are found to be interspersed with granules. The parenchyma is traversed by vessels, of which the direction is generally vertical. He had frequently been struck with the rapidity with which the pulp diminishes in volume, and with the extent of this diminution. Sometimes, indeed, it would appear in a short space of time to be almost annihilated; and this seems to take place more decidedly when the tooth has been in a healthy state, and more frequently in adult than in temporary teeth. This shrinking, or almost total disappearance, may be accounted for by a peculiar collapse or change in the congeries of cells of which we find the pulp to be made up. The use of this peculiar arrangement, and the purpose which it serves in the economy of the part, will furnish curious subjects for future inquiry. A subject also highly worthy of investigation is the nature of the contents of these cells. They must evidently be filled either with air or fluid; but they are so extremely minute, that he has not yet been able to ascertain which. Much diversity of opinion, Mr. Nasmuth proceeded to remark, has always existed respecting the connexion of the pulp with the ivory of the tooth; and as to whether the ivory be simply a product of the pulp, or a transformation of its substance. Although this is by far the most interesting point in dental physiology, and involves the grand question of the manner in which the tooth is formed, as well as that of its arrangement and conformation, it is, notwithstanding, less understood, has been less studied, and is, consequently, more obscure, than any other part of the subject. The vague style in which authors discuss, or rather dismiss this topic, shews how little has been really done to elucidate it. The formative surface of the pulp displays a general cellular arrangement, which Mr. N. denominated reticular, and which, he stated, may be described as resembling a series of skeletons of desiccated leaves. [Drawings illustrated the appearances.] The large compartments, or leaves, of the reticulation, were seen to be oval, and overlap one another. On insulating one of these compartments, or leaves, its structure is found to be curious and regular. These beautiful reticulations have peculiar diversities in different animals. He first observed them in the human pulp, and soon found them in all other animals which he had an opportunity of examining, varying in size and arrangement in different cases. He had next extended his observations to the capsule, and to the capsular investment of the enamel, and found in these the same reticular disposition, though with characteristic variations. These leaves of reticulation are surrounded by a well-defined scalloped border, from which, occasionally, processes are observed to project at regular intervals. Mr. N. had next proceeded to inquire how the transition into ivory is effected. The researches which he had made on this point, he stated, are, as yet, imperfect; and he approached the subject with diffidence, knowing the deceptive results to which novelties sometimes lead; and well aware of the necessity of long study and deliberation, before judgment

be positively given on a point hitherto undecided. How does the fibre of the tooth originate? and how is the interfibrous substance, which must form the main bulk of the tooth, deposited? Mr. N. stated how far his own observations allowed him to answer these difficult questions; and he hoped by a few facts, which he thought his investigations had placed beyond doubt, to pave the way for a satisfactory explanation of the formation of dental bone. On the surface of the pulp, he observed, are found innumerable detached cells, with central points. Generally, these cells form a regular and complete coating, studded with points, which are placed at intervals, corresponding in extent to those between the fibres of the teeth. These points are rendered visible, from the greater opacity of the intermediate material, and will be seen to reflect or absorb the light, according to the difference in the focal distance. A comparison between the superincumbent perfect ivory and the formative surface of the pulp beneath, is always easy; because portions of the former at an early stage, at any rate, remain adherent to the latter, and fragments of the dental bone are found strewn over it, more especially in human teeth. The cellular conformation of these fragments is always evident, and in size and appearance they are perfectly accordant with cells of the pulp. At an early stage of dental development, the reticulated or cellular appearance of the pulp is particularly beautiful. When merely a thin layer of ossific matter has been deposited on its surface, it may with great facility be drawn out entire, together with the former, laid on a glass, compressed a little, and then examined with the high powers of the microscope. The different layers of cells will be seen, and the transition into ivory may be observed. It appeared to him that the framework of the reticulations, or cellules of the pulp, is constituted by the fibres of the tooth, which, while in this state, are spirally coiled, and fit into one another. At all events the diameter of these fibres of the reticulations is precisely that of the fibres of the ivory, the points or projections rising from the framework correspond to the centres of the cells, and may be traced to belong to their structure. The fibres of the ivory are frequently very spirally curved, like those of the pulp, as they must be from the manner of their evolution. A diagram shewed the appearances presented by a portion of a recent tooth, which has been submitted to the action of acid. Part of the pulp was visible in connexion with the ivory, and the spiral fibres were seen as they are evolved on the surface of the former. It appeared to Mr. Nasmyth, on microscopic examination, that this convoluted fibre is made up of single successive granules, which are developed one after the other from the body of the pulp, until the fibre is complete. The manner in which the osseous matter is deposited in the cells of the interfibrous substance he had not been able to discover. It would appear that these cells are subdivided into minute cellules, for they present the appearance of being filled with granules in certain progressive stages of development. He stated, however, that in whatever aspect, therefore, we view the formative organs of the tooth, and the dental tissues themselves, and whether we examine the latter during the process of their development, or after their formation has been completed, we are every where met by appearances which denote a cellular or reticular arrangement. He allowed that these views of the formation and structure of the teeth are both bold and novel, but he did not

claim for them infallibility; he simply submitted them to the Association as the results of actual observation. He fully recognised and respected the authorities ranged in support of very different theories, though he still ventured to think that, were not his limits confined, he could easily shew how what he held to be fallacies and incongruities have arisen. As, for instance, from want of practice in the manipulation of materials, the precise nature of which has not been attended to; want of familiarity with microscopic appearances; ocular deception; the want of a well-defined magnifying power; and imperfect light in the microscope used; have been, doubtless, also causes of many of the conflicting conclusions to which almost all inquiries in this region of anatomy have arrived. He thought that the view he had taken of the subject more satisfactorily than any other explains facts of daily experience. The laminated arrangement of the osseous cells explains the concentric fracture of the tusks of the mammoth, and of other teeth, when left to decompose spontaneously. The cells being in imbricated apposition, and held together by earthy salts, being moreover arranged in layers, conformably with the periphery of the pulp, must be regarded as concentrically laminated. The existence of this structure explains the phenomena daily noticed by ivory cutters, and also Mr. Hunter's experiments of feeding animals with madder, the result of which is incompatible with any other theory of the structure of dental bone. No view hitherto taken of the structure of dental bone has afforded a satisfactory explanation of the ordinary morbid appearances of the tooth; but many of these, he thought, may be explained, if we regard the latter as cellular. Still he did not conceive that he had in any way exhausted the subject; far from it. He was quite alive to the imperfect nature of his researches, and was prepared for correction on many points, when more extended and more varied investigations shall have been undertaken. He had found that Schwann, in a recent work, teaches, that all the primary tissues of the animal frame are cellular; and has given to the world some remarkably interesting details on this subject. He says, that he has remarked the characteristic "cellular nuclei," or elementary cells, on the enamel membrane, that they are continued in minute fibres, and that these are similar to the epithelium cylinders in mucous membranes. He notices what he calls cylindrical cells on the surface of the pulp; and he supposes that these cylindrical cells of the pulp are the fibres of the tooth in their first stage, which does not at all coincide with Mr. Nasmyth's observations. Schwann regards the dental substance as the ossified pulp, whilst Mr. Nasmyth's observations lead him to conclude that the cells of the ivory are altogether a distinct formation. Schwann acknowledges, however, that he is ignorant of the process of transition, and he regards the dental pulp as a simple cartilage. In fact, he starts with a ready-made hypothesis, and founds his opinion rather on the observations of others, and on the inferences he draws from them, than on his own actual researches: with respect to what he himself gives as his own, it accords for the most part with the details Mr. Nasmyth had first communicated. According to Purkinje and Raschkow, the pulp consists at first of nearly uniform globules, without vessels and nerves; afterwards vessels arise in it, and at last nerves also. On the surface the globules are more regularly arranged, and more longitudinally extended, and turned in an external direc-

tion under right, or very slightly acute angles. These longitudinally drawn out globules, Mr. Nasmyth observed, are plainly cylindrical cells. They contain very evidently in fresh teeth the characteristic cellular nucleus-corpuscles, and are very similar to the prisms of the enamel membrane. The interior of the pulp consists of round cells also, with a nucleus; and between these cells run vessels and nerves. If we draw the pulp of a young tooth out of its cavity, and then examine the dental substance, whether deprived or not of its calcareous salts by muriatic acid, we shall find on its internal surface, at any rate inferiorly, where the already formed dental substance is still thin and soft, a layer of the cylindrical cells of the pulp. These have about the same thickness as the solid fibres of the dental substance, and also the same course; and inasmuch as they, on the one hand, plainly belong to the pulp, on account of their conformity with the cylindrical cells adhering to the remaining surface of the pulp; and on the other hand, as they cohere more firmly with the dental substance than with the pulp, and remain attached to the former, Mr. Nasmyth presumed that here a transition takes place, and that the cylindrical cells of the pulp are only the fibres of the tooth in their first stage, and change into the latter by filling with organic substance, becoming solid and ossifying. Sometimes these cylindrical cells are not found on the dental substance; but then, in their place are found a number of cellular nuclei. These are of a very pale colour, and are intimately connected with the dental substance, so that they are easily overlooked; but when the attention is once directed to them, it is impossible not to recognise them: the spaces between them are very narrow. Against the theory that the dental substance is the ossified portion of the pulp, the facility with which the one is separated from the other has been adduced; and he allowed the force of this objection. Nevertheless, it is at any rate weakened by the circumstance that a portion of the pulp actually remains attached to the dental substance, and by the fact that in half-ossified ribs, for instance, the cartilage can be easily separated from the ossified portion; and it must be remembered, that in the tooth the separation must be easy in proportion to the differences between the consistence of the pulp and of the dental bone.

We give *verbatim* Mr. Nasmyth's next paper 'On Epithelium,' in continuation of this interesting subject:—"In a former part of this communication I have endeavoured to prove that the pulp, the formative organ of the tooth, is composed of cells. I have also shewn that the character of the teeth themselves is more or less cellular; and the observations which I have made on the structure of the epithelium have led me to the conviction that it also is composed of cells. Although some of the facts which I am about to relate have, since the prosecution of my researches, been noticed by Heule and Schwann, in Germany, I think it right, nevertheless, to state concisely all the results of my investigations. Leewenhoeck, who did so much towards the advancement of structural anatomy, was the first to give an accurate account of the structure of the epithelium. His researches on this subject are contained in letters to the Royal Society in the years 1674, 1684-85, which will be found in the third and fourth volumes of his collected works. He there states that the human epidermis and epithelium are composed of scales; and of these he has left very accurate descriptions and delineations. He spoke of the scales of the epithe-



lium as existing upon the mucous membrane of the mouth. The researches of subsequent observers tend to prove that these scales, or cells, exist in various forms upon the surface of all mucous and serous membranes, upon the inner membrane of the vascular system, &c. With respect to the existence of these scales on those membranes, I agree with the authorities whom I have just quoted; and, having premised thus much, I shall now proceed to treat, firstly, of the structure of the epithelium generally; and, secondly, on the epithelium as existing in the cavity of the mouth. *Structure of the epithelium generally*:—The epithelium is a layer of substance destitute of vessels, which covers the vascular surface of mucous membranes. Though destitute of vessels, it cannot, however, be considered as inorganic, as I shall presently shew. If the surface of a mucous membrane (for instance, the conjunctiva, or the buccal) of a living animal be slightly rubbed, it will be found, on microscopic examination, that numerous small particles have been detached from it. At the first glance they present precisely the appearance of scales, for they are flat bodies with a thick portion, or nucleus, in their centre, and with very thin and transparent margins. It was Leeuwenhoek who first gave to these bodies the name of scales. They are found not unfrequently with a curved margin, and without a central spot, or nucleus, and their surface often presents numerous transparent points, with very fine lines. The nucleus of the scale generally contains a small body, which has been termed the nucleus-corpuscle. But, by this simple method of observation, we do not obtain an insight into their true structure. If we remove the secretion from the surface of an irritated mucous membrane, we shall find another class of bodies, which differ from these first mentioned, in being smaller and more globular. They have a nucleus of the same size as those of the so-called scales, and also a nucleus-corpuscle; but the surrounding structure is in the form of a cell, and is much smaller. Here and there may also be observed a nucleus with its accompanying corpuscle, lying in substance which presents no appearance of a cell. The structures here described may also be seen on a careful examination of a section of the epithelium and mucous membrane of a young subject. On the surface of, and in immediate apposition to, the mucous membrane, are seen numerous nuclei, which, more externally, are surrounded by a cell; and, on approaching still nearer to the surface, we find this cell, from having increased considerably in size and become compressed, assuming the appearance of a scale, which retains the nucleus and its corpuscle of primitive size.\* In the fetus, the defined and well-formed scales of the epidermis are not unfrequently distinctly seen externally; the *rete malpighii* consists of newly formed cells; and between the two may be observed other cells in a state of progressive development. On the surface of the vascular mucous membrane, minute cells are found with a nucleus in their interior, round which the cells grow; and this, in short,

\* The various stages of the development of the epithelium may be satisfactorily traced, by removing, after a short maceration, the layer of epithelium from the under surface of the tongue of a young calf, and placing it upon a piece of glass, when, if the external surface of the object be brought into focal distance, large scales only with their central nuclei are observable; but if the object be approximated to the glass, so as to bring the internal part of it into the proper focal distance, numerous small scales are brought into view; and if the object be still more approximated to the lens, so as to bring its internal surface into the proper focal distance, numerous rounded cells become apparent.

is the process of development of the minute bodies which constitute the epithelium. An interesting subject of investigation, and one which, I believe, has not been entered upon by those who have hitherto treated of this department of anatomical science, is the manner in which the component parts of the epithelium are connected. The cells on the surface of the mucous membrane are separated from each other by considerable spaces, which are occupied by a gelatinous substance, interspersed with minute granular bodies. But the scales forming superficial layers of the epithelium are separated by very minute linear spaces; but are still connected together by a translucent, gelatinous substance. This latter displays considerable elasticity, as is rendered evident by an attempt to lacerate the epithelium in a moist state, if the latter be examined at the same time by the aid of a magnifying power. Each time that the laceration is attempted, the membrane yields, and the scales separate to a certain extent, but regain their original position on the cessation of the effort to draw them apart. In some instances a fibrous structure is evident in the gelatinous substance between the scales. The scales towards the free surface are distinctly observed to overlap. The gelatinous substance, above alluded to, presents distinct granular bodies, which give to the epithelium, *en masse*, a rather dense aspect, the individual scales being sometimes covered by these granules; the latter can, however, be separated from the scales by compression: by which means, indeed, the granules themselves may be made entirely to disappear. In certain parts of the epithelium of the calf, distinct fibres are observed, which pass over the surface of the scales and connect them together, thus forming a very delicate net-work. This appearance is most evident upon compression of the thick epithelium on the anterior part of the alveolar arch of the upper jaw. In these cases where the small scales, or small clusters of scales, are being continually thrown off, as on the surface of the body and of the mucous membranes of man and animals generally, the scales composing the external layer will be found to overlap each other, and thus the gradual pressure of scales below, which are increasing in size, is the cause of the throwing off of these cuticular lamellae. After these have been detached, their place is occupied by newly formed scales. But there is another form in which the external layer of cuticle is removed, viz. in a continuous layer. The cuticle of the frog is composed of minute scales, the borders of which do not overlap, but are held in direct opposition, so as to form one lamina, which has a beautiful continuous tessellated appearance. This layer, covering the whole body, is thrown off entire by frogs and efts. I am disposed to believe that it is this covering which, according to naturalists, is swallowed by the animal after having been thrown off. As soon as this layer is removed, another lamina of scales is seen on the surface of the animal's skin. If, after the death of a frog, it be immersed in water, this thin, external, translucent layer, generally separates; but, upon prolonging the maceration, another lamina is found to be gradually separating from the cutis, which is dense, and sometimes measures a quarter of a line in thickness. Internally it will be found to be composed of very numerous cells, while externally the regular series of scales is evident. The tessellated lamina, alluded to above, evidently takes its origin from this layer of cuticle. An examination of specimens, and a consideration of the facts which I have related, cannot,

I think, lead to any other conclusion, than that the cuticle and epithelium are organised tissues. It would appear that they are formed from a fluid secretion on the surface of the vascular chorion; the various stages of development being, 1st. the formation of nuclei and corpuscles; 2d. that of cells; 3d. the growth of the latter, effected by vital imbibition; 4th. their compression and gradual conversion into minute lamellae, or scales. In short, it appears a rational conclusion, that the component parts of the cuticle and epithelium have within themselves a power of growth; and it remains for pathologists to determine what share the derangement of this function has in the production of cutaneous diseases. Another argument in favour of the organic nature of the epithelium is derived from the circumstance that, under certain modifications, it presents various vital phenomena, among which may be mentioned the ciliary motions. I now proceed to describe my researches *On the structure and development of that portion of the epithelium which lines the cavity of the mouth*. In the foetal subject, previous to the extrusion of the teeth, it forms on the alveolar arch a dense projecting layer, distinguishable from the surrounding membrane by its whiteness, and by the existence on its surface of ridges and sulci, having a waving course and a variable direction. The alveolar epithelium is thicker in proportion to the youth of the subject examined. It is most prominent where it corresponds with the molar teeth; its internal surface is concave, receiving the projecting mucous membrane. This portion presents various objects for investigation. Firstly, as regards its composition:—It is made up of a mass of scales, lying one on the surface of the other. This disposition shews that the terms 'dental cartilage,' or the 'cartilage of the gum,' which have hitherto been applied to this structure, give an erroneous idea of its true nature, for cartilage always presents the corpuscle discovered and described by Purkinje. As in other portions of the epithelium, the external scales here are the larger, and this holds good generally, until we come to the surface of the vascular mucous membrane, which presents simple cells with their corpuscles. In the interior of this alveolar epithelium, where it corresponds to the molar teeth, small vesicles may be frequently observed, varying in size from  $\frac{1}{4}$  to  $\frac{1}{2}$  of a line in diameter. They appear to the naked eye to be transparent; under the microscope their parietes are found to consist of attenuated scales, and their cavity to contain a fluid abounding in minute granules and cells.\* The internal surface of the epithelium, covering the alveolar arch, frequently presents concavities or indentations, which are from a line and a half to three or four lines in circumference; they correspond to projections from the mucous membrane, formed by a larger species of vesicle. The latter is deeply implanted in the vascular mucous membrane. The parietes of these vesicles are composed of a very delicate membrane; they contain a transparent fluid, which coagulates on the application of heat, or acid, or on immersion in spirit; and in this fluid float numerous globules and scales, similar to those of the epithelium generally. The internal or attached surface of the alveolar epithelium also presents numerous fringed processes, measuring from one line to one line and a half in length, and half a line in breadth, which sink into the substance of

\* The vesicles here alluded to are most probably those which Serres describes as glands for the secretion of tartar: they are very numerous, even after the extrusion of the incisor teeth of the calf, and are seen with great facility internally.

the subjacent mucous membrane. Under the microscope these fringes are found to be composed of elongated scales connected together, forming masses, which divide and subdivide until they attain such an extreme tenuity that the most minute terminations consist but of two scales in marginal apposition. If the epithelium be carefully separated from the surface of the mucous membrane, corresponding to the unextruded molar teeth, and placed in water, or in diluted spirit of wine, for some little time, its internal or attached surface presents these fringes much enlarged, and forming a mass more considerable in size than the dense epithelium itself. The epithelium covering the mucous membrane of the palate presents transverse rugæ, corresponding to those of the mucous membrane. If these palatal rugæ of the epithelium of the calf be carefully examined from the internal surface, with a magnifying power of one-inch focal distance, each will be found to consist, or to be composed of, numerous depressions, or *cul de sacs*, which receive prolongations or pointed processes of the subjacent mucous membrane. They are of extreme tenuity, and when viewed by the aid of high magnifying powers, are observed to consist of distinct scales. A question of much interest, and one to which I have paid considerable attention, is, Whether recent investigators are warranted in considering mucus and epithelium as identical? I am disposed to think that they are formations quite independent of each other; but my reasons for arriving at this conclusion are numerous, and the details of my investigations upon this part of the subject I propose to treat of at length elsewhere."

## THURSDAY.

SECTION A.—*Mathematics and Physics.*

1. Sir John Herschel's 'Report of the Committee appointed to represent to Government the Recommendations of the British Association relative to the Extension of Magnetic Observations.'
2. Professor Powell, 'On certain Points on the Wave-Theory.'
3. Mr. Hodgkinson, 'On the Temperature of the Earth in the Deep Mines of Lancashire and Cheshire.'
4. Professor Forbes, 'Two Years' Observations of Thermometers sunk to various Depths near Edinburgh.'
5. Mr. Snow Harris, 'Report on Meteorological Observations.'
6. Dr. Ure, 'On a New Calorimeter for the Measurement of Heat disengaged in Combustion.'
7. Professor Stevelling, 'On Filling a Barometer without the Aid of the Air-Pump, and obtaining an Invariable Surface in the Cistern.'

The first of these papers related to the measures adopted for sending out the Antarctic Expedition, and establishing observatories, &c. &c., of all which our readers are well informed.

The second was one of high theoretical interest, in which the learned professor endeavoured to reconcile the differences of opinion and contradictions of phenomena connected with the dispersion of the wave surface, and elliptical polarisation of light, *sed adhuc sub judice lis est*.

Mr. Hodgkinson had carried on a series of experiments, as recommended by the Association, and with instruments supplied by it, on the temperature of the earth at certain depths in Lancashire and Cheshire mines. The results were rather anomalous, and the experiments were being continued to obtain further data. Professor Stevelling and Professor Forbes noticed that coal mines, from their development of heat under particular conditions, were unfit localities for solving this problem.

Professor Forbes then brought forward his own weekly observations on the subject during two years, and gave the results of twelve thermometers sunk at three different stations in trap tufts, loose sand, and compact sandstone. The measurement of their depth was in French feet; why, we do not know. The practical

advance in this class of investigation is most laudable.

Mr. Snow Harris's paper in our last. (See pp. 586-7.)

The researches of Dr. Ure are still in progress. They have reference principally, in their present stage, to the heating powers of Welsh anthracite, Llangennech, Lambton's End, and other coals. They will, however, be extended to every variety of fuel, natural and artificial. In experiments with former water calorimeters, the estimate of a portion of the heat could not be depended upon, in consequence of the combustion being kept up by the current of a chimney through which a quantity of the heat passed away. This defect by his present apparatus (a copper bath traversed with zig-zag flat pipes, and an enclosed furnace) Dr. Ure has entirely removed. The results, in a complete form, will be highly interesting and important.

The business closed with a description of Professor Stevelling's method of filling a barometer without the aid of an air-pump; which consisted of using the vacuum in the tube itself as a substitute for the air-pump usually employed, and so difficult to be employed with perfect success by ordinary workmen.

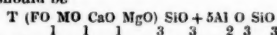
SECTION B.—*Chemistry and Mineralogy.*

1. Mr. L. Playfair, 'On the True Constitution of Chlorochronic Acid; a new Compound called Iodo-sulphuric Acid; and the Chromates of the Magnesian Family.'
2. Professor Schönbein, 'On the Theory of Electro-Chemistry, in relation to the Protection of Metals from Corrosion.'
3. Professor Shepard, 'On Meteoric Iron.'
4. Mr. Richardson, 'On the Composition of the Silicates.'
5. Dr. Ure, 'On Microscopic Chemistry (Experiments on Fermentation).'

The first and second papers were given at length in No. 1181, pp. 566-7. There was, however, an error in the title of Mr. Playfair's, which this opportunity enables us to correct: for "Chlorochlorine," read, as above, "Chlorochronic."

Professor Shepard, of the Medical College, South Carolina, gave an account of an analysis of meteoric iron, in which he had detected new elements, which he thought would be regarded with some interest, viz. chlorine and silicon. Several specimens of meteoric iron were exhibited, some of them remarkable for the extraordinary manner they had exfoliated. Also specimens of native terrestrial iron, the existence of which had been doubted. One had been found in Connecticut, and another in Pennsylvania. The latter was arseniuretted native iron. No traces of nickel or cobalt could be detected in either.

Mr. Richardson gave the results of his analysis of several specimens of Idocrase, and observed that greater exactitude in the representation of analytical results in the formula would tend to remove the apparent contradictions of the beautiful law of Isomorphism. The constitution of minerals is not correctly conveyed by many of the received formulæ. He instanced especially Petalite and Idocrase. The formula of the latter, according to Mr. Richardson, should be



Dr. Ure gave a summary of his paper. It related to the formation of alcohol in the vats, without yeast, by spontaneous fermentation, and to other matters more interesting to the commissioners of excise and to distillers, than to the general reader. The microscopic character of the experiments was derived from observations as to the nature of the particles composing yeast.

SECTION C.—*Geology.*

1. Mr. Bowman, 'On Microscopic Vegetable Skeletons found in Peat.'
2. Mr. Murchison, 'Exhibition of a Geological Map of Europe, by M. Von Dechen.'
3. Mr. Murchison, 'On the Carboniferous and Devonian Systems in Westphalia and Nassau.'
4. Dr. Lloyd, 'On Saurian Remains in the New Red Sandstone of Warwickshire.'
5. Dr. Ward, 'On Impressions of Steps in the New Red Sandstone of Greensill.'
6. Mr. Knype, 'On a Trap Dyke in Cumberland.'
7. Mr. A. Nasmyth, 'On the Structure of Fossil Teeth.'
8. Dr. Adams, 'On Peat Bogs.'
9. Mr. Yates, 'On the Estuary of the Mersey.'

Mr. J. E. Bowman read a paper 'On some Microscopic Fossil Vegetable Skeletons found at the bottom of a peat bog in Warwickshire.' The stratum was from four to six inches thick, and covered several acres in extent, in the form of a white impalpable powder. On testing this powder with chemical agents, and submitting it to high microscopic inspection, Mr. Bowman came to the conclusion that it was the remains of parasitic plants of the order of *Conferve*. Thus they appeared to occupy the same position in the vegetable, which Ehrenberg's *In-fusoria* occupied in the animal, world.

Sir C. Lemon reported the steps taken towards establishing a museum for the preservation of mining records. (See preceding numbers of the *Literary Gazette*.)

Mr. Murchison exhibited a 'Geological Map of Europe,' and Part I. of a work by Von Humboldt on the geology of America. From this it would appear that the oolitic strata do not exist in South America, nor probably in North America. The great development of this continent is of the tertiary formation; and in the south the cretaceous series is immense. Mr. Greenough expressed his opinion that a great coal-field might be found under the morasses of northern Germany, as exhibited in the map before them.

Mr. Murchison's important paper on the systems in Nassau, &c., we anticipated in our first Report. (See p. 550.)

*Fossil Flora.*—Dr. Buckland stated that Messrs. Hutton and Henslow had undertaken to continue the fossil flora of Great Britain, and solicited specimens (sent to the Geological Society), which should be carefully returned to their owners.

Dr. Lloyd offered 'Remarks on the Geology of Warwickshire,' and noticed the discovery of Saurian remains in the sandstone, such as occurs at Leamington, and contains the salt springs, and consisting of the *Megalosaurus*, *Dolichonotus*, and *Platygathus*, mixed up with *Ceprolites*.

Dr. T. O. Ward exhibited specimens, &c., and described the impressions of footprints of animals on the new red sandstone of Grinsille, in Shropshire. These phenomena, and the marks of rain, much resemble Dr. Buckland's examples, only that the marks were of three toes, with long nails, pointed forwards; and except, in few instances, where they resembled the dog, there were no footballs visible. Dr. Buckland had some similar sandstone from Dumfriesshire.

Mr. J. A. Knype read a paper 'On a Trap-dyke Formation in Cumberland,' twenty-two miles long, and from twenty to thirty yards in breadth. In its course it coincides with the great Cleveland dyke, and may be a continuation of it; the whole thus crossing from the Solway Firth to the German Ocean.

Mr. Nasmyth read a paper 'On the Structure of Fossil Teeth,' which he commenced by some excellent observations on the value of the fossil remains of these organs to the inquirer in the vast and grand domain of geology. The



interfibrous substance of the teeth, he said, had been improperly described by modern anatomists as presenting no traces of peculiar conformation. But his researches, he continued, had led him to the conviction that it is not only organised, but so differently and characteristically so in different animals, as to be capable of affording valuable aid to the naturalist in classifying the animal kingdom. This organisation he proceeded to describe as cellular, and he exhibited various diagrams of its appearance. The fibres of the teeth, he said, presented an interrupted, or baccated appearance, as if made up of different compartments. In the human subject, each of these compartments is oval. In the oran-ou-tan the divisions of the fibre are of a rhomboidal form: in fact, each class of animals seems to have a distinct characteristic appearance, but all are similar in respect to the general baccated appearance. The tusk of the mammoth, Mr. Nasmyth observed, presented a laminated concentric structure: the experiments of Mr. Hunter on animals fed on madder, lead to the conclusion that the structure of the teeth is actually laminated; and the workshop of the mechanic, called by Professor Leslie the school for philosophers, furnishes numerous facts in support of the same position. Other phenomena of daily occurrence are left unexplained by the theories of the dental structure which have hitherto been adopted; but all may be accounted for, Mr. Nasmyth ventured to assert, by the laminated cellular arrangement of the interfibrous substance, and by the peculiar baccated disposition of the fibres. The enamel which, according to Retzius, Purkinje, and others, consists of fibres, Mr. Nasmyth finds to be composed of compartments, or divisions, of a semicircular form: the convexity of the semicircle, or arch, looking upwards towards the free external portion of the tooth. Mr. Nasmyth finds that the enamel contains a larger quantity of animal matter than had previously been supposed. In proof of this he adduced a chemical analysis of its composition, which had been undertaken at his request by Dr. Thomson of Glasgow. After having alluded to his researches on the structure of the pulp, which are given in our report of his paper on that subject, read before the Medical Section, he proceeded to state that there exists a remarkable uniformity in the structure of the formative tissues of the tooth, and of the dental substance itself; for not only is the interfibrous substance cellular, but the surface of the pulp, which is the organ of the production of the ivory, and the internal, or productive, surface of the capsule also, uniformly present a reticulated, or cellular, appearance. Mr. Nasmyth concluded by remarking, that he ventured to hope that his researches had established a new and beautiful instance of the harmony of the laws of nature in demonstrating the fact of the uniformity of the products of the capsule; for not only, he said, have I found that the enamel is uniformly provided with an external covering, but that there is also a membranous investment of the *crusta petrosa* itself. He also thought that we must be compelled to allow the uniform presence of a fourth toothbone substance, the existence of which is more constant in all animals, either normally or anomalously, than any of the other three hitherto recognised constituent substances.

Dr. Adams, 'On Peat Bogs,' insisted on the great advantage which would result from rendering them serviceable for agricultural purposes. He mentioned, that in some cases where his plan had been adopted, the bogs were ac-

tually more profitable than the neighbouring lands. Another paper was read upon the same subject, in which it was stated that they might be made available as an excellent manure by the use of sulphuric acid, applied to the peat in heaps, mixed with putrefying vegetable matter as a sort of compost.

[Mr. Elias Hall exhibited a fine Map of the great Central Coal-field, and the Section closed.]

#### SECTION D.—Zoology and Botany.

1. Dr. Pritchard, 'On the Extinction of the Human Races.'
2. Mr. Forbes, 'On the Distribution of the Pulmoniferous Mollusca in Britain.'
3. Major-General Briggs, 'On the Cotton Plant of British India.'

Dr. Pritchard, 'On the Extinction of the Human Races,' lamented the disappearance of so many varieties, and warmly appealed to the feelings of the meeting on behalf of the active and indefatigable Aborigines Protection Society, whose pamphlets and prospectuses are so industriously circulated. A long discussion followed.

Mr. E. Forbes read a Report, drawn up at the request of the British Association, 'On the Distribution of the Pulmoniferous Mollusca of Britain, and the Influences which affected that Distribution.' In this respect climate and soil principally operated; the cold northern parts being far less abundantly inhabited than the central and southern regions, where they increased more rapidly, and displayed superior colours and forms. Rocks had also great influence, and those of a calcareous order were particularly favourable. This able naturalist went at considerable length into the various minutiae of his subject; and Mr. Lyell enlarged on the expediency of completing observations on the chemical influence of strata, the subaqueous distribution of species, &c. &c.; so that errors in geological deductions, respecting such as still existed, or were extinct, might be avoided.

Major-General Briggs, 'On the Cultivation of the Cotton of Commerce,' a paper of great commercial and colonial interest. The committee of agriculture, &c., emanating from the Royal Asiatic Society, has been some time engaged in investigating the subject; but still much remains to be ascertained concerning it, especially as regards the soil in which the best colour is produced. General Briggs pointed out that the American, African, and Asiatic cotton plants, were all of different kinds; some perennial, and some triennial. Treating of the cultivation of cotton in India for the supply of British consumption, he earnestly recommended the common species indigenous to the country, the *Gossypium herbaceum*, as most worthy of attention, being as fine and better coloured than the exports from New Orleans, and only supposed to be inferior from the want of care in picking and preparing it. The non-interchange of commodities between England and the East has been long a reproach to us, which the public discussion of such matters as this is, we trust, calculated to bring to an end. It is evident, with regard to cotton, that unless they come from abroad in a fit state for use, our manufacturers will not pay the same price for them as when they are clean and properly managed. They will prefer those which are neither filled with sand nor with flowers, nor are unbleachable; though in colour, length of staple, silky fineness, and other qualities, they may be grown equal.

#### SECTION E.—Medical Science.

1. Dr. Thompson, 'On Alkaline Dyspepsia.'
2. Mr. Hodgson, 'On Tying Arteries, and on a certain Appearance of those Vessels.'

3. Mr. Conlhupe, 'On the Respiration of Deteriorated Atmospheres.'
4. Mr. Costello, 'Cases of Calculus treated by Lithotomy.'
5. Mr. A. Nasmyth, 'On the Structure of the Teeth.'

#### SECTION F.—Statistics.

1. 'Contribution to the Medical Statistics of Birmingham,' by the Local Committee.
2. 'Academical Statistics,' by Professor Powell.
3. Report 'On the State of the Working Classes in Bristol,' by the Statistical Society of Bristol.

At this Section a report, drawn up by a Committee of the Association, was read, 'On the Mining Districts of the North of England;' some contributions to the medical statistics of Birmingham by a local committee; and also a report 'On the State of the Working Classes of Bristol,' by the Statistical Society of that city.

#### SECTION G.—Mechanical Science.

1. Mr. Jeffreys, 'On Ventilation and Warmth.'
2. Dr. Lardner, Conclusion—'Resistance on Railways.'

The first paper was that of Mr. J. Jeffreys, 'On Ventilation,' inserted in our last No. p. 587.

Dr. Lardner concluded his observations 'On the Resistance of Railway Trams.'

This day the general Union Ordinary, briefly mentioned at our page 568, took place, and was altogether a very animated scene. The town-hall is a superb building for such purposes; and not only was the great area itself filled with company, but the side galleries had each a long dinner-table, and the end galleries filled with well-dressed lady spectators. Among the leading personages we observed, or had pointed out to us, the Marquess of Northampton presiding, the Earl of Dartmouth, the Earl of Bradford, Lord Sondes, Viscount Lifford, Sir J. Mordaunt, Bart. M.P. Sir E. Bagot, Sir J. Guest, Sir D. Wilkie, the Bishop of Toronto, Mr. Stevenson, the Ambassador of the United States, Mr. Scholefield, M.P., Mr. Gally Knight, M.P., Mr. Thorneley, M.P., Mr. Hutton, M.P., Mr. Wilbraham, M.P., the Hon. Colonel Clive, Le Comte de Pambour, M. Schönbein, Mr. W. Scholefield, the Mayor of Birmingham, and nearly all the scientific men who had taken prominent parts in the sectional proceedings, and the local Directors and Secretaries, to whom the meeting generally, and this entertainment in particular, owed so much for their exertions in making every necessary arrangement.

On the removal of the cloth, a temporary platform was got up, near the chair, from which the Noble Marquess gave the usual loyal toasts, 'The Queen,' 'The Queen Dowager, and the rest of the Royal Family,' which were drunk with loud cheers.

'The British Association,' was the next toast, and, in introducing it, his lordship spoke eloquently and warmly of the benefits it had conferred on science, and the brotherly feelings it had engendered and promoted among scientific men, of every portion of the empire, and of all countries engaged in similar pursuits.

The health of the President, the Rev. Mr. W. Vernon Harcourt, followed, and the proposer took occasion to defend the Association from the charge, that in advancing science it injured religion. It was not, however, the first time that accusations had been made, for it was urged against Galileo, whose system of astronomy, then so much condemned, was now universally believed. It was quite as possible, indeed, that Dr. Buckland, or Professor Sedgwick, or other geologists, might be as mistaken in interpreting the book of nature, as others might be mistaken in interpreting the book of God; but he did say it was not consistent with

the spirit of Christianity or religion to impute mistakes, if they really did exist, to evil intentions, and to impute to others opinions which they did not entertain, merely because we entertained different opinions ourselves. He thought, however, that such assertions arose from a narrow and erroneous view; and whether geologists were correct or not in those opinions on geology, which certain persons deemed to be inconsistent with Scripture, he must say, that they as firmly and really believed Scripture itself to be true, as those who made the imputations against them (*cheers*). He believed Scripture to be inspired, but he confessed, if he were afraid of the inquiries which the pursuit of science rendered necessary, he should shew that he had not the thorough confidence in the religion he professed which he now entertained.

Professor Whewell, being called upon, gave "The Scientific Societies of Great Britain," to which he added, with a just eulogy, the name of the Marquess of Northampton, the president of the Royal Society. For this his lordship returned thanks, and proposed "The Universities of Great Britain and Ireland."

Dr. Buckland acknowledged the compliment, as connected with the University of Oxford, and observed that an agricultural school had been established there, in consequence of a suggestion which he had thrown out at the meeting at Newcastle, for the appointment of a scientific committee to attend to that important object, the multiplication of the quantity of the food of mankind, which would confer incalculable benefit upon the agricultural improvement of the earth, and he had no doubt the example would be extensively followed in other places. It had been asked what was the utility of geology, and he would wish to mention one great benefit that had resulted from the last meeting of the Association in Newcastle. At that assembly a committee was formed, to act under the authority of the Association, for the purpose of collecting mining records, the result of which would be the preservation of human life, and the prevention of the waste of human property. By the exertions of that committee a society was established, and the thousands of human beings, whose lives would be saved in future generations, would have cause to cherish the memory of the British Association, and those who had been instrumental in the establishment of the institution.

The President then gave the next toast, "Success to the Trade and Manufactures of Birmingham." In uttering that sentiment he could not refrain from observing, that science was intimately connected with the prosperity, not only of the wealthy manufacturer, but still more so with the welfare and very existence of those workmen who obtained their livelihood in connexion with the machinery which science had so much improved.

The Mayor of Birmingham, on behalf of his fellow-townsmen, begged to return thanks for the handsome manner in which the last toast had been proposed and received. As he was one of those who had the pleasure of soliciting the Association to hold the present meeting in Birmingham, he thought it proper to express to the members of the society the acknowledgments of the town, for having accepted the invitation; and he knew no greater benefit that could be conferred on a manufacturing population like Birmingham, than that which must arise from the attendance of such a host of distinguished men, who had visited the town this week. Although the reception might be somewhat less

resplendent than the Association had been accustomed to meet with, yet he trusted the welcome was no less warm or sincere; at all events, he hoped the members would feel themselves justified, by the treatment they received, to confer the very high honour of a second visit upon the town of Birmingham at some future day.

The health of Mr. Stevenson, the American minister, was next drunk with great applause; which Mr. S. answered, by dwelling emphatically on the mutual relations of Great Britain and America, and on the duty of cultivating the most intimate intercourse of peace and friendship between them. They were allied in blood, religion, habits, and associations; and they worshipped the same God, in the same language. The present was an enlightened age, which might justly be called the age of improvement, and of those arts particularly which give happiness to man and improve human nature. Could they look about with apathy, or carelessly contemplate the workings of mechanical art, and those wondrous developments in geology, chemistry, astronomy, and every thing which tended to benefit and adorn mankind? They saw the mighty power of steam, proudly walking the waters like a giant refreshed in its strength, and overcoming the wind and waves; and what, he would ask, could conduce more to the extension of civilisation? It increased the prosperity of nations, and made neighbours of people who had never seen each other before. The Association had nothing to do with the strife of political opinion; they were brought together by one congenial feeling, and in a spirit of peace and union every thing was calm around them: he sincerely hoped the Society would long continue to dispense the fruits of its enlightened labours, more widely than it had yet been able to accomplish.

To the health of the distinguished foreigners who had honoured the meeting with their presence (stated to be thirty-four in number), the Comte de Pambour very briefly returned thanks in French.

The President then gave "The health of those noblemen and gentlemen who had honoured the Association by their countenance and support, and who had handsomely thrown open their houses for the entertainment of many of the members." They were particularly indebted to the Earl of Dartmouth and the Earl of Bradford, whose kind encouragement of the Association tended much to its advancement and prosperity. He also complimented Sir R. Peel, whom some of the members had visited at Drayton, and regretted that he was not among them on this occasion. Science was of no party, and every political man might mingle with its friends advantageously to himself and his country.\*

The Earl of Dartmouth returned thanks. He had been particularly alluded to as fulfilling the office of one of the vice-presidents, and however unworthy he was to be associated in that capacity with the Noble Marquess (Northampton), he could only say he was sincerely anxious for the prosperity and continued useful exertions of the Association. He was fully sensible of the great advantage it

\* This is an opinion that cannot be too strongly enforced, and indeed it is quite surprising that statesmen of all parties do not more clearly see how much of deserved popularity they may acquire by the very cheap, simple, and easy means of bestowing a personal attention to the encouragement of literature, and the arts and sciences. The busiest of ministers would find time to do this, if he was as fully aware as he ought to be how much it would promote his own interests and influence, as well as the weight and character of the government with which he was connected.—*Ed. L. G.*

was to a district, the inhabitants of which were so much interested in the advancement of every branch of science, to be visited by the British Association, and he believed that feeling was very prevalent throughout the neighbourhood.

The President next proposed "The Philosophical Institutions of Birmingham."

Mr. Hodgson acknowledged the honour which this great assemblage had conferred upon the philosophical institutions of the town, although not possessed of the advantages of an ancient town. But the visit of the British Association to Birmingham could not but impart new energies to its scientific institutions and increase their means of usefulness, by proving to all that natural knowledge is not only highly esteemed by those who are engaged in its pursuit, but also by those who are most elevated in worldly station or literary attainments. He remarked that a recent calamity had cast a gloom over the delight with which the Association had been welcomed amongst us. The lamented death of Mr. Corrie, for more than thirty years the respected President of the Philosophical Institution, had deprived the scientific establishments in this town of their greatest ornament.

The health of the governors and masters of the Free Grammar School called upon the Rev. Mr. Lee. He observed that it was but a few months since that the officers of the Free School ventured upon the novel experiment of introducing into the establishment a department devoted more especially to instruction in the arts and sciences; and he did feel it to be a most happy occasion and favourable augury, that the year in which this experiment was commenced should also be the year of the visit of the British Association to the town of Birmingham.

The local treasurer, secretaries, and officers, the stewards of the dinner, &c. &c., were finally toasted, and suitably acknowledged; after which the company broke up about eleven o'clock.

Of the results of the final meeting of the General Committee on Saturday, we communicated the particulars in our No. 1181 (pp. 568-9); as also the fact of the closure of the whole at the Town-Hall, at two o'clock. These, however, require some further notice, and, for the sake of completeness in our Report, we shall, at the same time, shortly revert to the proceedings of the General Committee on Thursday.

When the invitations from various places were brought forward, that from Glasgow was supported by written documents from the municipal authorities, signed by the lord provost, the principal public bodies, and learned and scientific institutions. The speaker of the deputation stated, *inter alia*, that within the walls of the College, ample accommodation could be made for all the Sections.

The Hull invitation was ably enforced by Mr. Frost, who, if Glasgow were preferred for the next meeting, earnestly hoped that his townsmen would not be disappointed of the honour in the ensuing year.

Manchester renewed its invitation through Mr. Charles Wood, who also expressed a hope that this gratification might be allowed them in 1841.

The wishes of York were not to interfere with the circle of invitations from different places, but to state the desire of that city when such circle had been completed, the British Association would renew it by visiting the site of its birth.

Sir C. Lemon, though not deputed from Plymouth and Devonport, would take it upon him to say, that whenever the Association could hold their meeting there, it would be taken as a great compliment, and every exertion be used to give them an hospitable reception.

The Marquess of Northampton, on moving that the next meeting should be at Glasgow, observed, that the invitations they had just heard so warmly pressed furnished very satisfactory evidence that the country were not tired of them, whatever individuals might allege in depreciation of their usefulness. That great manufacturing towns, and great seaports of England, after the example of the highest seats of learning and science, still considered it an honour and an advantage to receive the British Association, was extremely gratifying; and proved that their annual assemblage was truly reckoned to produce a great good to the community. He had much pleasure in proposing Glasgow, which united all the advantages of an important seaport, a populous manufacturing town, and a celebrated university. It was also surrounded by a very interesting geological district; and, indeed, afforded them every ground to expect a meeting as satisfactory as any they had yet attended.

Mr. F. Baily seconded the motion, which was carried unanimously.

Mr. Murchison then proposed that the time should be Thursday, the 17th of September, when the heads of the University should have returned to their duties. The General Committee would meet on Wednesday the 16th; and thus by choosing the middle of the week, instead of Monday, as heretofore, they would consult the feelings of the Scots people, which were averse to travelling on the Sabbath. Mr. M. raised a laugh by observing, that on the ensuing Sunday the members might walk about and enjoy the beauties of Glasgow.

Mr. John Taylor seconded the motion, which was agreed to; and thus a date fixed, which will be more convenient for the Geological Section than of late years.

The President, Vice-Presidents, &c., were then nominated, as previously reported; and we have only to add, that Mr. Murchison's consent to be re-elected one of the Secretaries was only obtained at the express and unanimous desire of the General Committee, to back that of the Council and Committee of Recommendations. On the election of Major Sabine, a most cordial testimony was borne to the great value of the Reports with which he had enriched the volumes of the Association's Transactions; to his important labours in magnetic surveys and the investigation of terrestrial magnetism; and to his effectual efforts in promoting the Antarctic Expedition, about to sail under the command of his friend and associate in these labours, Captain James Ross.

Mr. Murchison expressed his sense of the honour conferred upon him, and said he had performed the duties of his office to the best of his abilities. He asked his enemies to forgive him, if he had made any: he had not intended to make one. (*Applause.*) He had thought he might do more for the science to which he was devoted with his hammer and in far travel; but if it was thought that his services would be advantageous to the Association, he acceded in an instant to their request.

The re-appointment of Professor Phillips to the office of Assistant General Secretary was also hailed with great approbation; for every one acknowledged his faithful and zealous ser-

vices, not only to the general cause, but to many of the Sections, to which he communicated valuable scientific papers. The re-elections of Mr. John Taylor as Treasurer, Mr. Yates as Secretary of the Council, and of Colonel Sykes, Mr. Porter, and Mr. Leonard Horner, as Auditors, were also cordially carried; and Dr. Buckland having moved the thanks of the Committee to the Dean of Ely, the retiring Secretary, the meeting adjourned.

At the concluding General Meeting, on Saturday, the Marquess of Northampton, President, his lordship read a letter from the illustrious M. Humboldt, in which he expressed his regret that his official attendance upon the King of Prussia put it out of his power to visit the Association at Birmingham; and at the same time stating the high esteem in which he held its proceedings, as conducive to the best interests of science.

The Dean of Ely read a list of the grants for the next year; and Mr. John Taylor, the Treasurer's report.

The Dean then moved a vote of thanks to the inhabitants of Birmingham, for the cordial and hospitable reception they had given the Association. He was not the less pleased with it, because it did not involve the splendour of their entertainment at Newcastle; which led to serious and alarming expenses, which it was not their wish to inflict upon the places they visited. No doubt, it was delightful to experience such treatment, but he was not sure that it was altogether of a philosophical character. At Birmingham it had been conducted on a kind and temperate scale. The accommodations were excellent, the private hospitalities sufficient, and all being without ostentation, he considered it a model fit to be followed on future occasions.\* Sir C. Lemon seconded the motion, which was carried by acclamation.

Professor Whewell moved the thanks to the philosophical institutions of Birmingham; and alluded, in an affecting manner, to the death of Mr. Corrie, whose eloquent invitation to this meeting could never be forgotten by any one who heard it. The reverend gentleman then urged the claims of science, which taught us our ignorance, as well as the elevation of our nature. Those misrepresented it much who described it in other terms; for the lessons of science implanted reverence and gratitude for the past, hope for the future, and humility in our own estimation.

Mr. Lyell seconded this motion, and noticed the rapid progress of the Philosophical Institution and its museum, as a consequence of this meeting.

Dr. Buckland moved the acknowledgments to the governors and master (the Rev. Mr. Lee) of King Edward's Free School, for the use of that noble building. The learned professor

\* As similar sentiments were uttered on other occasions, we cannot but observe that we question their taste and judgment. "Comparisons (says the adage) are odious," and Birmingham might have received the compliments it fairly deserved without depreciating, in the slightest and most distant manner, the truly magnificent hospitality of Newcastle. In our opinion this town was falling in too much with the silly outcry against our feasting and holding festivals, as if it were felt to be just, which it certainly is not. Let us view the matter in its truth. Were the scientific proceedings injured at Newcastle? No: they were at least equal,—we should say, superior, both in extent and value, to those at Birmingham. And as for the prodigious and alarming expenses, what was the result? Why, that after all the sumptuous entertainments, and most gratifying private accommodations at Newcastle, a handsome surplus remained of a voluntary subscription, to be apportioned among the most useful and valuable institutions of the town:—For our parts, we cannot imagine any thing more worthy of grateful remembrance than our Newcastle usage; and we think it injudicious to have uttered a syllable that might be misconstrued otherwise.—*Ed. L. G.*

took the opportunity to eulogise the new plan of education carried into practice here, by which, besides those classical instructions so indispensable to the scholar, the practical in Science and the useful in the Arts were also taught.\* Such, he maintained, must have been the intent of the munificent founders of all colleges, though, at the period they lived, such studies were unknown. Now, based on primary religious instruction, which must be the sure foundation in every age and at all times, no system could be good which excluded such information, and the study of the natural world, the production of the hand of God. Could it be possible that there was a discrepancy between his works and his revealed word? There was none; and it was only the prejudice of an intolerant mind that could imagine such a contradiction. He compared them to persons undervaluing the highest legal and medical authorities, merely because they dissented from them on some immaterial points; and setting their own ignorance up as the standard which admitted of no dispute. So, because they did not agree with him (Dr. Buckland) in his interpretation of some passages of Scripture, charged him with the most inconsistent opinions;—he, to whom the world appeared to be a temple of the Deity, and life itself one continued act of adoration: If rightly interpreted, such would be the sense and feeling of every Christian lover of Science in his investigation of the glorious works of the Creator of all. The speaker then adverted with praise to a lecture on education by Dr. Blakiston (of which a copy sent to us attends our future notice); and expressed his belief, that the assaults of the British Association were in the condition of those who called out "sour grapes." The summaries which its volumes contained were of the greatest value to science; and more was done to promote its interests in this one week than during all the rest of the year. After a touching eulogy upon Mr. Corrie, and mentioning the death of Dr. Smith, the father of English geology, the learned professor sat down. Mr. Wrotesley seconded the motion, and it was unanimously voted.

Mr. Murchison proposed thanks to the gentlemen who had so ably planned and carried out the local arrangements, and particularly specified with commendation the Model-room, with its curious examples of manufacturing industry; the Dudley excursion, and the entertainment of Thursday; which popular features were well calculated to advance the graver interests of the Association. Mr. J. Taylor bore testimony to how much had been accomplished in these respects, and trusted that the impulse given by the meeting would tend to encourage the progress of manufactures and the fine arts wherever they assembled. He also spoke in praise of the economy which had been exercised, and which he preferred to any extravagance: and having seconded the motion, it was accordingly carried.

Mr. Hallam (the first individual of very high literary eminence—independently of science—whom we have seen take an active part in the

\* We may here observe, that the same system is acted upon in King's College, London, and has always been warmly advocated in our columns. And, *a propos* of this Edward VI. School, we were told a singular anecdote, viz. that when it was founded the offer of 200 a-year, and of a portion of waste crown lands, was made to Birmingham and an adjacent village: the latter chose the ready money, and has enjoyed its annual 200 ever since; whilst the property allotted to Birmingham has increased in value with its increasing property, till it is now many thousands a-year, and may, in the course of time, become productive to an extent that can hardly be calculated.—*Ed. L. G.*



proceedings of the Association, and we hail it as a good sign) moved thanks to the various distinguished foreigners who had honoured the meeting by their presence. He defended the Association from the attacks made upon it, and compared its utility to the work of those who erected light-houses for their own safety and guidance, but which were a blessing to every nation of the earth. He concluded by complimenting the speech of the American minister, and the sentiments he had uttered on the preceding Thursday; and Dr. Roger seconded the motion.

The Marquess of Northampton moved a similar vote to the President, Mr. Vernon Harcourt; which Mr. Hutton seconded: and then the noble chairman closed the proceedings, and bade them all farewell. He alluded with high satisfaction to the praise bestowed upon the Association by such a man as M. Humboldt; to the foreign invitations to Pisa, Piedmont, and Gottingen, which they had received; and to the useful experiments on railroads brought forward at the meeting. What they did for science might be questioned or under-rated; as people might ask, What is the use of walking? What is the use of the mental faculties? All he would answer was, that our limbs were given us and our minds endowed by Providence, for our happiness and its own wise ends; and he would as soon think it necessary to defend the possession of these, as the benefits conferred on mankind by the cultivation of science.

During the applause which followed, the noble Marquess vacated the chair, which was taken by the Earl of Dartmouth, and the thanks of the assembly officially voted to him, for his great and constant services to the Association, in the most cordial manner. The Marquess expressed his thanks, and the meeting separated.

#### LITERARY AND LEARNED.

THE BRITISH EMPIRE IN THE EAST.  
By COUNT BJORNSTJERNA, the Swedish Ambassador.  
[Concluded from Page 591.]

[In this Number we complete the very important paper on our Indian Dominions by the Swedish Ambassador; having pointed out the value of which, in the few remarks with which we introduced it, we shall now only express our sense of the obligation conferred upon the *Literary Gazette*, by enriching its pages with a view of more importance than has often fallen within the sphere of any periodical publication.]

*Concluding Reflections.*—From the distant period when the sun of civilisation first rose on the banks of the Ganges, to that when a few of its rays reached an opposite hemisphere on the shores of the Ohio and the Mississippi, more than fifty centuries have expired, and still the greater half of the world remains on the lowest step of cultivation, sunk in ignorance and darkness! During this long period, the civilisation of mankind seems rather to have changed its abode than to have extended its dominion, and in those places where it formerly flourished most luxuriously with its companions, trade, industry, and riches, there is now nothing remaining but barbarism and deserts. *Palmyra* stands alone in the wilderness, with its thousands of broken columns; *Persepolis* and *Babylon* are fallen to the ground; and where *Thebes* and *Memphis* raised aloft their giant monuments, the wanderer now seeks refuge under the humble roof of the Beduin. In the place of those which have passed away we see, on the contrary, in another hemisphere, towns rise like mushrooms from the marsh—*Albany*, *Mobile*, *Cincinnati*, and others. They certainly do not yet equal the greatness of the fallen, but the course is opened, the time is unlimited; and who knows

but what a Carthage may still rise on the Hudson, a Tyrus on the Amazon?

Does not even Europe itself, this centre of civilisation, present the same deplorable scene of fallen powers and culture passed away? See that classic ground where *Plato* stood surrounded by his disciples, *Demosthenes* by his hearers, and *Phidias* by his master-pieces, after having been sunk in darkness for centuries, now first again shoot up a weak and scarcely kindled ray! See the rich shore where *Constantine* raised his capital; its triumphal arches are fallen, its hippodrome changed to a slave-bazaar; and where the holy *Chrysostomus*, under the lofty dome of St. Sophia, eloquently spread the mild doctrines of Christ, now is heard only the false belief of Islamism! See the romantic palace of *Alhambra*, how it bears witness of the former cultivation of the Moors—their refinement in the arts and in chivalry! But what are the Moors now?—half-savage barbarians, and the royal palace of Granada a ruin surrounded by the wild guerillas. Has not Rome itself, once called the Eternal City, fallen from its double height, the temporal and spiritual? It is now no more than the grave of the former, and the shadow of the latter!

Thus have light and darkness, like life and death, creation and destruction, alternated with each other!

But in this general change, as well of the material as of the intellectual world, a high, a consoling thought, presents itself to the mind of man; viz. that the light has, at every stage of its existence, gained an increased brightness, through the advance of science; life, a higher meaning by the revelation of Christianity; the creation, a more extensive development through the decrees of Omnipotence: that each has thus more and more advanced on the path towards perfection, continually drawing nearer the common goal, where the mystery will be solved.

We know, that "in the beginning God created the heaven and the earth. And the earth was without form and void, and darkness was upon the face of the deep; and the Spirit of God moved upon the face of the waters," and then the naked rock first raised its head above the surface; that, after a chaotic night of an immeasurable space of time, a new period in the creation began; called, in the beautiful figurative language of Holy Writ, the day of creation,\* when vegetable life was kindled first in the lowest link, the humble moss, then rising in its development, to those noble-spreading trees, with the lofty evergreen palm† at their head. That, after other revolutions had taken place, organic life commenced, beginning with the low zoophyte, and rising gradually from link to link, through the different degrees of testaceous and amphibious animals,

\* For the Almighty within the circle of eternity, "one day is as a thousand years, and a thousand years as one day." (See David's Psalms).

† The typical nature of all the remains, as well of the vegetable as of the animal kingdom, which, after worlds that have passed away, have been discovered in the strata of the most northern countries, and which consist, within the vegetable kingdom, in a great measure, of the palm-tree; and within the animal kingdom, of such creatures as are now only found under the tropics (the rhinoceros, tapir, hyæna, &c.), seems to prove, that the temperature of the northerly and polar countries, at this early period of the creation, was much warmer than it now is, probably answering to that which at present prevails in the neighbourhood of the equator. That there could ever be the same temperature in the polar regions and between the tropics, cannot be supposed, it being contrary to the physical law of our planetary system. Hence it must follow, that at the time when the temperature at the poles was so high that the palm-tree could grow there, that within the tropics must have been proportionally greater, and, therefore, so high, that the physical organs of man could not endure it. Hence, again, it follows that man's first dwelling must have been in the

and the varied kinds of fish; that, after renewed changes, by which the ocean's bed was lifted above the level of the clouds,\* and the tops of the mountains sunk below the depths of the sea, those monsters of the ancient world† appeared, which are now, happily, no longer to be seen, though they have left, in their fossil re-

northern regions, where the temperature was the same as it now is at the tropics.\*\* This agrees also with the Indian tradition, which states that the countries near the north pole were first inhabited, and that it was thence that the first conquerors of India (the Brahmans and Ketrus) came; this tradition also gives the names of these northern countries, which so nearly resemble those of Scandinavia, that one is almost tempted to believe that these conquerors came from this peninsula.

Among the Greeks we find *Plato* stating (from ancient records), that the part of the earth first inhabited by the human race, was an uncommonly large island, *Atlantica*, which according to *Olaus Rudbeck*, was our Scandinavia. Without entering into the latter author's somewhat hyperbolic arguments, it is, nevertheless, curious to observe how well they agree with the above-named geological discoveries with respect to the former temperature of the polar regions, as they do also with the Indian tradition. That the etymological researches, on the other side, shown, that the language in Lapland is nearly related to that spoken in Liffland, and that the latter has a great affinity to Sanscrit; whence it must follow, that the Laplandish language is also related to the Sanscrit, although no one has yet thought of drawing up a comparison between them.

If we now unite this similarity between the Laplandish language and the Sanscrit, with the Hindus' traditions of their northern origin, and also with the opinion, which may be received hypothetically at least, that the countries near the poles were inhabited before those in the neighbourhood of the tropics, we may thence very logically conclude that the Sanscrit is derived from the language of Lapland, and that the Hindus (or at least their superior castes) are descended from the first inhabitants of Scandinavia—the Laplanders and the Dwarfs!

"Wie lieblich um meinen entfesselten Busen  
Der holde Wahnsinn spielet."—*Oberon*.

The hypothesis of the polar countries being inhabited before those situated nearer the tropics must, however, be confined to the antediluvian race; for, with regard to those who escaped the deluge, and have left traces after them in all parts of the earth,† they must, first, have fixed their dwellings on some of the highest mountains, which would, of course, be first free from the mass of water which then covered the earth. The Himalay mountains, and the table-land of Thibet and Páwer, being among the highest tracts, it seems most probable that the post-diluvian race first fixed their dwellings there, and thence descended to the lower parts of the earth. This supposition is, however, grounded on another hypothesis, that the surface of the earth has not, since the last great deluge, undergone any of those tremendous revolutions which have, in some instances, raised mountains from the depths of the sea, and, in others, sunk them below its bed,—a hypothesis which, no more than the other, can be proved, seeing that the two leading branches (the Thibet and the Hindu) of the Himalay mountains themselves are not, according to the latest researches (Gerard's and Jacqueton's), of contemporary origin, but the one older than the other; the same is the case with regard to the Alps, the different chains of which (according to Beaumont) were not formed at the same period.

\* On the Himalay mountains there are, 16,000 feet above the level of the sea, and consequently much higher than the clouds, immense strata of ammonite and other fossils of maritime animals and plants. Such is also the case on the Alps.

† Ichthyosaures, Plesiosaures, Megalosaures, &c.

\*\* A scientific Frenchman, M. Laurence, is said to have expressed, in a work lately published by him, the same opinion respecting the polar regions having been inhabited before the other parts of the world. I have not, however, seen this work, and therefore cannot say whether the reason given by him agrees in a greater or less degree with those above presented to the reader.

† It appears to me as if this deluge had, in Sweden, gone from north-east to south-west, seeing that almost all the larger rolling-stones here (which have evidently been the tops of granite mountains, either still rising on the earth or sinking under its surface) show clearly that they have been broken by a force (that of the deluge) coming from the north-east, and still show in that direction (north-east) the flatter surface seen in granite on that side where it has been broken. In most places, these tops also correspond with rocks situated immediately on the north-east side of them. That they should have been carried forward by a torrent of water, or masses of ice, seems to me contrary, as well to the laws of hydraulics as of physics: the strongest stream of water could not move even smaller stones; how, then, could it carry with it great rocks? especially up steep heights, where they are now often met with. Should they, on the other hand, have been masses of ice, it must first be explained how great piles of rock could float on the water, which afterwards became ice. The smaller rounded stones (the erratic) are fractions of the larger, and, even now, often fit together with them or with each other.

mains, indisputable proof of their having existed; that those were replaced by the higher natures of the mammalia; and, finally, in the last of these periods of creation, the noblest work of the Almighty, *man*, appeared on the earth, and, with contemplative countenance, beheld and admired its beautiful paradisaical surface.

But ought not this developement, constantly increasing through an immeasurable space of time, at every stage, as well of the *material* as of the *organic* creation, which has raised the former from the barren surface of the granite rock to these numerous strata and this delightful vegetation, which now form the riches of the world; and the latter from the lowest link of the zoophyte, to the noble being *man*, the image of his Maker; ought not this to inspire us with the pleasing hope (like the rays of a beacon, which shews through the darkness the way to the distant harbour), that a similar developement shall also exist in the *spiritual* world, and that the high celestial guest that animates our perishable clay shall, in proportion to the cultivation of the powers of the mind, to the suppressed sensual appetites, and to the performance of duties imposed in the course of previous stages, rise and approach more nearly the ideal of perfection, gain a higher *intelligence*, the noblest of enjoyments, the truly paradisaical; and after having, in an ethereal, more suitable form to the development of the soul, wandered through the wide extent of those planetary worlds, which form the abodes of a higher organism than our own, shall finally reach the greatest of all happiness: *Absorption in its Divine origin*?—Such is the belief of the *Brahmin*.

#### PINE ARTS.

##### NEW PUBLICATIONS.

*History and Practice of Photogenic Drawing, on the true Principles of the Daguerriotype; with the Method of Dioramic Painting.* By the Inventor, L. J. M. Daguerre, Officer of the Legion of Honour, and Member of various Academies. Translated from the original by J. S. Memes, LL.D., Hon. Member of the Royal Scottish Academy of Fine Arts, &c. London, 1839. Smith, Elder, and Co.; Edinburgh, Adam Black and Co.

This little treatise will, of course, be eagerly sought and read by every admirer of "The New Art." Published, as it wisely is, at a very moderate price, it would be exceedingly unjust on our part if we were to do more than simply to state that it is divided into four chapters: the first consisting, principally, of the interesting reports upon the subject to the French Chamber of Peers, by M. Gay Lussac, and to the French Chamber of Deputies, by M. Arago; the second, describing the comparatively unsuccessful experiments, during a long course of years, of M. Niepce; the third, containing a full and remarkably explicit account (illustrated by plates representing the necessary apparatus) of the details of M. Daguerre's process; the fourth, explaining, somewhat obscurely, the principles on which dioramas have been painted.

It happens, very opportunely, that a French gentleman, M. St. Croix, has arrived in London from Paris; and, at the Argyll Rooms, every day, publicly goes through M. Daguerre's process. We "assisted" the other morning at one of these lectures or exhibitions. Unfortunately, the weather was more than usually capricious; now, the sun shining with great splendour, anon, a deluge of rain wrapping the whole scene in gloom; nevertheless, we were much grati-

fied. The process, however, takes a longer time than we had anticipated. From the preparation of the plate (a matter of exceeding nicety and importance) to the fixing of the the image (that of the opposite building), occupied above two hours. Owing to the unfavourable circumstances to which we have alluded, the image after all was imperfect, but the parts which *did* tell were wonderfully beautiful; and we saw several plates that had been executed at a more auspicious moment, which were without blemish, and in which the minutest touch was reproduced with magical fidelity, although with much less force than we expected. Many persons will be disappointed by the low tone of the image. Undoubtedly that is a great defect: it is impossible not to wish that, speaking musically, the piece could be played an octave higher. But the art is in its infancy; every scientific mind in Europe will be immediately directed towards the subject; and we predict, that ere long, improvements will be suggested in the process, which will leave nothing to be desired, either in that, or in any other respect.

*The Army and Navy.* Painted by J. P. Knight, A.R.A.; Engraved by S. W. Reynolds. Ackermann and Co.

WHEN we read, in "The Edinburgh Review" of July, 1838, the account of the only interview that ever occurred between those illustrious men, Wellington and Nelson, and which took place in 1805, in the antechamber of the office of one of the secretaries of state, just after the former had returned from his brilliant career in India, and just before the latter sailed on that memorable expedition which terminated in the glorious victory of Trafalgar, it struck us that it would make an admirable picture. We are of that opinion still; but we cannot say that we think Mr. Knight, able artist as he is, has been happy in his conception of the subject. Instead of that eager communication of opinions and feelings which must have animated both the great commanders in question, on an occasion so mutually interesting to them, they are represented coldly standing side by side, as if unconscious of each other's presence. In fact, they are simply two unconnected whole-length portraits; the likeness of the naval being, by the by, much more faithful than that of the military hero. It is but justice to add, that all the accessories of the composition are skillfully introduced, that the general effect is rich and powerful, and that the plate has been spiritedly and beautifully engraved by Mr. Reynolds.

*Portrait of the Duke of Wellington.* Painted by J. Simpson; Engraved by B. P. Gibbon. Moon.

Of lives and portraits of our illustrious hero it seems as if "the line would stretch out to the crack of doom." As we either stated, or intended to state, in our notice of the original picture when it appeared in the Exhibition of the Royal Academy of the present year, we are no great admirers of cocked hats upon canvass; although Mr. Simpson has contrived to make his as little offensive as possible.

*Woodland Sketches; a Series of Characteristic Portraits of Trees, adapted for Studies for Artists and Amateurs.* Drawn from Nature and on Stone by George Childs. Nos. III. and IV. London, 1839. Tyas.

THESE two numbers, we are sorry to say, complete this very clever and interesting publication. Of the beautiful and character-

istic representations of trees which they contain, our favourites are, "The Cedar," "The Ash," "The Weeping Birch," and "The Scotch Fir."

*Findens' Portraits of the Female Aristocracy of the Court of Queen Victoria.* No. VIII. How inexhaustible are the beauties of nature! The portraits which ornament the present number are those of Countess Cowper, Lady Forbes, and Lady Mary Grimston, "the counterfeit presentments" of three lovely women, all from the skilful pencil of Mr. John Hayter.

#### ORIGINAL POETRY.

##### SONNET ON GREENWICH HOSPITAL.

ENGLAND may point to yonder pile with pride,  
And tell the Stranger—who with wondering eyes  
Demands for whom these lofty columns rise,  
That grace with regal pomp fair Thames's side—  
"Here who by Rodney, Howe, and Nelson led,  
Hurled my dread thunders on the roaring seas,  
Braving for me the battle and the breeze,  
Find from the storm a shelter for their head.  
And ne'er may England's sons with sparing hand  
Grudge you the mansion, princely though it be,  
That with your scars ye won, ye veteran band!  
Here, from the perils of the deep set free,  
Make landmen stare with stories of the main,  
And fight in peace your battles o'er again."—R.B.S.

#### BIOGRAPHY.

##### HENRY SINGLETON, ESQ.

It is with great regret that we announce the death of this veteran, able, and universally respected artist, which took place on Sunday, the 15th instant, at the house of his friend, Mr. Simpson, at Kensington Gore. Mr. Singleton was seventy-three years of age, and had been for some time, we imagine, the oldest living exhibitor at the Royal Academy, and at other institutions connected with the fine arts. His works, therefore, have been too frequently before the public to render it necessary for us to say more of them than that, if they did not reach the highest point of merit, they always evinced the possession of great knowledge, talents, and refinement. No man composed with more facility, and no man's compositions were more generally pleasing. It was but lately that we noticed, in the *Literary Gazette*, the completion, by Mr. Singleton, of an extensive series of cabinet pictures, illustrative of Shakspeare; an effort which, at his time of life, was exceedingly creditable to his powers, and to his love of his profession. Sir Joshua Reynolds, speaking of Luca Giordano, expresses surprise that, considering his numerous qualifications, he had not made himself "a great man in art." The same may be said of Mr. Singleton. The cause, probably was, that having many years ago formed a certain style, and established certain principles of design, light and shade, and colouring, he thenceforward painted entirely from his own conceptions and recollections, without any further reference to those sources of excellence which the intense and never-ending study of nature can alone supply. Although his *forte* lay in works of imagination, Mr. Singleton occasionally painted portraits: his group of the Royal Academicians, sitting in the council-chamber of Somerset House, under the presidency of Mr. West, attracted much attention at the time it was produced, and ought to have secured his admission into the Royal Academy. It has been engraved by Mr. Bestland. We are happy to say that Mr. Singleton was in easy circumstances, the result of his industrious and moderate habits. The unaffected simplicity of his manners, and the kindness of his disposition, had endeared him to a large circle of friends, by whom he will be sincerely lamented.

## VARIETIES.

**Science in Italy.**—Our last *Gazette* contained a paragraph, under this head, concerning the Scientific Meeting at Pisa in October. It appears that such an assemblage is held to be objectionable in the Roman states, for Cardinal Lambruschini has issued a circular letter to the chancellors of the Roman Universities forbidding the professors and the directors of cabinets of natural history and botanic gardens to visit Pisa on the occasion, or to correspond with the philosophers there. His holiness the pope has, it is averred, strong reasons for this prohibition.

**Poisons.—Paris Academy of Medicine.**—A communication was made from M. Orfila, in completion of his method for discovering arsenic in the human body, in cases of poisoning. It is well known that he has fully succeeded in detecting the minutest portions of this mineral, by boiling the substances, and then applying chemical tests to the result. But he had afterwards inquired, Whether arsenic might not exist in all human bodies, independently of poisoning? Whether it might not be introduced into the body by means of chemical tests, and the apparatus used in searching for it in such cases? and, Whether it might not also be communicated from the earth in which the corpse might have been interred? He has discovered that these three suppositions are all possible, and not of infrequent occurrence; but he has also shown that the arsenic obtained by his boiling process cannot be mistaken for the arsenic introduced by either of the three above hypothetical causes, and has laid down precise rules for making the distinction. It is considered, that he has rendered great service to the study of forensic medicine.

**Progress of Literature.**—Our Journal has been the parent of a very numerous offspring spread all over the face of the earth; but we were not prepared to see it stated ("Times" of Monday), that "In Ohio they have a *Literary Gazette*, called 'The Bucky Blossom'; and in Kentucky, 'The Rose of the Valley'; in New Jersey, 'The Belvidere Apollo'; in Maryland, 'The Kent Bagle'; in Ohio, also, 'The Toledo Blade,' and in Mississippi 'The Bowie Knife.'"

**Strange Sent.**—A more striking conjunction of civilisation and barbarism could hardly be given than by the fact related in the following anecdote. An *English lady* lately passing to Constantinople, in a steam-vessel, was about to sit down on a convenient-looking basket which stood on the deck, when, to her utter astonishment, she was warned by the commander not to do so, as it contained the head of the governor of the Dardanelles, on its way to be fixed up before the gates of the seraglio!

**Mrs. London's Ladies' Flower Garden, No. 1.X. (Smith),** continues its prosperous career. The present number contains some beautiful groups of flowers, coloured so like the life, that one is tempted to seek for their perfume.

**W. Ainsworth.**—We learn with the greatest gratification that our enterprising friend, and his associates, have been enabled to escape from the dangers of Turkish and Egyptian warfare, and arrive in safety at Constantinople.

**Göttingen Scientific Meeting.**—We hear that Major Sabine, Professor Lloyd, and others of our men of science, have gone to the meeting at Göttingen, where it is probable they will encounter the eminent Professor Strauss, and discuss all that has hitherto been ascertained by experiment, or anticipated by theory, respecting the great question of terrestrial magnetism.

**Theory of Waves.**—On the 1st instant

a fir-tree, about forty feet in length, and covered with great barnacles, was drifted across Dover harbour, and towed into that port. It is supposed to have been parted from the American shore by a hurricane, and borne on its long voyage across the Atlantic by the tidal action of the waves.

## LITERARY NOVELTIES.

In the Press.

A new novel by Miss Burney, called *The Romance of Private Life*.—Sporting Excursions in the Rocky Mountains, by J. R. Townsend, Esq.

## LIST OF NEW BOOKS.

An *Encyclopedia of Rural Sports*, by D. P. Blaine, Esq., Part I., 8vo. 5s.—The Book of Common Prayer, arranged in the direct order used in the Church Services, by the Rev. J. Bosworth, D.D., &c., post 8vo. 6s.—Chronicles of the Devises, being a History of the Borough, &c., of that name, by Francis Weylen, 8vo. 14s.—Archdeacon Hodgson's Charge to the Clergy of Derby, July 4 and 5, 1839, 4to. 2s.—Illustrations of the Comparative Anatomy of the Nervous System, by Joseph Swan, Part V., 7s.—Jethro: Lay Agency for the Diffusion of the Gospel among our Home Population, post 8vo. 5s.—Our Country: Spiritual Desolation of England, by Dr. J. Matheson, post 8vo. 4s.—Little Pedlington and the Pedlingtonians, by John Poole, 2 vols. post 8vo. 12. 1s.—The Poetical Works of L. G. Colth (a Welsh Poet), 8vo. 15s.—Saturday Evening, 5th edition, fcap. 6s.—Sketches in Ireland, 2d edition, fcap. 6s.—Essay on the Versification of Homer, by J. M'vor, 8vo. 5s.—Prayers by the Rev. H. Allen, 10mo. 2s.—6d.—Hon. and Rev. A. P. Percival's Apology for Apostolical Succession, 12mo. 6s.—Rev. H. Stebbing's Sermons, Vol. I. 12mo. 8s. new edition.—Journal of the Rev. Joseph Wolff, 1827 to 1833, 8vo. 12s.—Hon. and Rev. C. C. Percival's Plain Sermons, Vol. III. 12mo. 4s.—Short Moral Tales, German and English, by W. Berger, 12mo. 4s.—L. A. Donatti's German Grammar, 3d edition, 12mo. 3s.—The Magistrate's Pocket Companion, by W. Eagle, 12mo. 15s.—Documents and Dates of Modern Discoveries in the Nervous System, 8vo. 5s.—Trotter's Key to Ingram's Mathematics, 12mo. new edition, 9s. 6d. 6s.—History, &c., of Photogenic Drawing, by L. J. M. Daguerre, translated by Dr. Meems, post 8vo. sewed, 9s. 6d.—Le Tellier's French Grammar, by F. J. Walzer, 12mo. 4s.—Lord's Physiology, 2d edition, 12mo. 7s. 6d.—H. Meidinger's German Self-Teacher, fcap. 6s. 6d.—Days of Marlborough, and other Poems, by J. King, 12mo. 4s.—E. W. Symonds's Law relating to Merchant-Seamen, 12mo. 5s.—The Duke, a Novel, by Mrs. Gray, 3 vols. post 8vo. 11. 1s. 6d.—The Game of Billiards scientifically explained, by R. Kentfield, folio, 21. 2s.—Alfred de Rosann, by G. W. M. Reynolds, 8vo. 7s. 6d.—Hollo at School, by J. Abbott, 12mo. 2s. 6d.—An Apology for Cathedral Service, post 8vo. 8s.—Gilbert's Wonders of the World, edited by H. Ince, 4to. 10s.

## METEOROLOGICAL JOURNAL, 1839.

September.	Thermometer.	Barometer.
Thursday . . . 5	From 40 to 65	29.63 to 29.62
Friday . . . 6	40 . . . 67	29.62 . . . 29.55
Saturday . . . 7	40 . . . 64	29.66 . . . 29.72
Sunday . . . 8	51 . . . 66	29.66 . . . 30.00
Monday . . . 9	59 . . . 70	29.94 stationary.
Tuesday . . . 10	55 . . . 72	29.93 . . . 30.04
Wednesday 11	59 . . . 70	29.96 . . . 29.95
Thursday . . . 12	57 . . . 64	29.75 . . . 29.66
Friday . . . 13	43 . . . 70	29.62 . . . 29.41
Saturday . . . 14	50 . . . 63	29.18 . . . 29.06
Sunday . . . 15	58 . . . 61	29.00 . . . 29.94
Monday . . . 16	51 . . . 66	29.27 . . . 29.35
Tuesday . . . 17	51 . . . 60	29.46 . . . 29.43
Wednesday 18	45 . . . 59	29.43 . . . 29.50

Prevailing wind, S.W. Except the 6th, 9th, and 13th, generally cloudy, with frequent and heavy showers of rain.

Rain fallen, 1 inch and  $\frac{1}{2}$  of an inch.

Edinburgh.

CHARLES HENRY ADAMS.

## TO CORRESPONDENTS.

We are sorry that we cannot comply with the wish of the Editor of the "Foreign Quarterly Review," and insert his statement of the coincidences between him and the Swedish ambassador on the subjects which have recently given so much national interest to the pages of the *Literary Gazette*. The question of priority upon these points seems to us to be immaterial. Their truth is of great point; and their being stamped with so high an authority as that of Count Björnström is another, which, without disparaging the opinions of any reviewer, appears to us to give them their weight and importance. We are ready and willing to give our contemporary full credit for his sagacity in his No. for October 1839, but do not see how that interferes, or is interfered with, by a work prepared for the press early in that year.

Our review department has been rather curtailed this week, in order to make room for the winding up of the Association, and the conclusion of Count Björnström's interesting paper on India.

**ERRATA.**—In our last page 595, last line but two of Section F, for "where" read "whose;" note, p. 590, col. 1, for "Karamsin" read "Karamsin."

## ADVERTISEMENTS,

Connected with Literature and the Arts.

## THE MODEL of the BATTLE of

WATERLOO is now EXHIBITED at the Egyptian Hall, Piccadilly, by brilliant Artificial Light. Constantly illuminated from Four o'Clock in the Afternoon, and throughout the day in dark or unfavourable weather.

Open from Ten in the Morning until Nine in the Evening. Admission, One Shilling each.

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TION and RECOVERY of PERSONS AFFECTED with DISORDERS of the MIND.—Mr. Hare begs to announce to the Profession and the Public that the above Establishment is under his particular superintendence, and that the most strict attention is paid to the Medical as well as Moral Treatment of the Individuals who are committed to his care. The Retreat is delightfully situated on rising ground at the opening of Air Pale, little more than a mile from the town of Leeds. The Situation is healthy, cheerful, and also sufficiently retired; the Gardens and Plantations are extensive; the Premises combine proper accommodations for the exercise and amusement of the patients; and the Apartments are spacious, lofty, well ventilated, and fitted up in the most comfortable manner. The Establishment is to be considered more in the light of a temporary residence in the country, where the Patient is placed while he undergoes such a plan of treatment as may be necessary to restore the functions of the Brain, than as an Asylum in the common acceptance of the term; hence it is well suited for persons of weak mind, or who may be subject to fits of temporary insanity—for whom confinement is necessary. In recent cases a perfect and speedy recovery may generally be expected. Mr. H. also receives Patients under his care attended by experienced persons in Lodgings or Private Houses, according to the wishes of the Patients, and William IV. c. 109, sec. 47.—Applications, either personal or by letter (postage free), addressed 36 East Parade, Leeds, will meet with immediate attention, and have the most satisfactory reference, if required, to Patients already discharged, or their Friends; also to Physicians resident in London, Dublin, Hereford, Leeds, Sheffield, Scarborough, Wakefield, Bradford, &c. Patients have had occasion to visit patients at the Retreat. This day is published, in royal 8vo. dedicated, by permission, to Sir Benjamin Collins Brodie, Bart., V.P.R.S., and Charles Key, Esq., Senior Surgeon of the Leeds General Hospital.

**Practical Observations on the Causes and Treatment of Curvatures of the Spine, with Hygienic Directions for the Physical Culture of Youth, as a means of preventing the Diseases; an Etching and Description of an Apparatus for the Correction of Deformity, and Engravings illustrative of the Cases.** By Samuel Hare, Surgeon.

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## PICKWICK ABROAD.

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## COUNTRY BOOKSELLERS and the

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## KING'S COLLEGE, LONDON.—Medi-

cal School, 1839-40.—The Winter Session will commence on Tuesday, the 1st of October, 1839, with an Introductory Lecture, by Professor Arnott, at Two o'Clock.

Descriptive and Surgical Anatomy—Richard Partridge, F.R.S. Physiology, General and Morbid Anatomy—R. B. Todd, M.D.

Chemistry—J. F. Daniell, F.R.S. Materia Medica and Therapeutics—J. F. Royle, M.D. V.P.R.S. Medicine—Thomas Watson, M.D.

Surgery—J. M. Arnott. Midwifery, and Diseases of Women and Children—Robert Ferguson, M.D.

Comparative Anatomy—T. Rymer Jones. The King's College Hospital will be opened early in the coming Session, so that the Medical Students can now complete their Education at King's College.

August 27, 1839. J. LONSDALE, B.D., Principal.

## ST. GEORGE'S HOSPITAL MEDICAL

SCHOOL.—Session 1839-40.—The following Courses of Lectures will be delivered in this School, commencing October 1st, 1839:—

Theory and Practice of Medicine—Dr. Macleod and Dr. Seymour. Theory and Practice of Surgery—Mr. Cesar Hawkins and Mr. G. Habinston.

Clinical Medicine—Dr. Seymour, Dr. Macleod, and Dr. Hope. Clinical Surgery—Sir B. C. Brodie, Bart., Mr. Cesar Hawkins, and Mr. G. Habinston.

Materia Medica—Dr. Seymour and Dr. Macleod. Medical Jurisprudence—Dr. Lee and Mr. Charles Z. Macleod.

Botany—Dr. Robert Dickson. Anatomy and Physiology—Mr. Tatum and Mr. Henry James Johnson.

Descriptive Anatomy, with Dissections—Mr. H. J. Johnson and Mr. Henry Charles Johnson. Written Piece.

Chemistry, at the Royal Institution—Mr. Brande and Mr. Faraday.

The Introductory Address on the Opening of the Hospital School for the Session 1839-40, will be delivered in the Theatre of the Hospital, at One o'Clock, &c.

The Anatomical Lectures are delivered in the Anatomical Theatre in Kinnerston Street, written Piece.

A Public Distribution of Prizes in the several Classes will take place at the termination of the Session.

Further Particulars and Prospectuses may be obtained by applying to the Porter of the Hospital, or to the Porter of the Hospital Museum, or at the Anatomical Theatre in Kinnerston Street.



**ST. BARTHOLOMEW'S HOSPITAL.—LECTURES.**

Winter Session, 1880.  
 Medicine, by F. M. Latham, M.D., and G. Barrow, M.D.  
 Anatomy, Physiology, and Pathology, by E. Stanley, F.R.S.  
 Practical Anatomy, by Mr. Wormald.  
 Superintendence of Dissections, by Mr. Wormald and Mr. M'Whanne.  
 Surgery, by William Lawrence, F.R.S.  
 Chemistry, by W. T. Brande, F.R.S., and Mr. Griffiths.  
 Materia Medica and Therapeutics, by G. L. Roupell, M.D.  
 Midwifery, and the Diseases of Women and Children, by E. Rigby, M.D.

Summer Session, 1880, to commence May the 1st.  
 Forensic Medicine, by A. Farre, J. M. F.R.S.  
 Midwifery, and the Diseases of Women and Children, by E. Rigby, M.D.  
 Botany, by F. J. Farre, M.D. F.R.S.  
 Comparative Anatomy, by A. Farre, L.M. P.R.S.  
 Practical Chemistry and Natural Philosophy, by Mr. Griffiths.  
 Clinical Lectures on Medicine, by Dr. Latham and Dr. Bonpelli, and on Surgery, by Mr. Lawrence and Mr. Stanley.  
 Prospectuses of the Lectures, and a Statement of the Arrangements of the School, may be obtained by application at the Anatomical Theatre, or at the Museum.

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